FAUNA OF INDIA

THE FAUNA OF INDIA

AND

THE ADJACENT COUNTRIES

CHALCIDOIDEA
(HYMENOPTERA)

Part 1

Introduction

AGAONTIDAE, TORYMIDAE, LEUCOSPIDIDAE,
CHALCIDIDAE, EURYTOMIDAE, PERILAMPIDAE,
EUCHARIDAE, CLEONYMIDAE, MISCOGASTERIDAE,
PTEROMALIDAE, EUPELMIDAE and ENCYRTIDAE

By

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EDITOR'S PREFACE

The superfamily Chalcidoidea includes parasitic Hymenopteran insects which are free-living as adults but their larval stages parasitise various groups of insects and other Arthropods. It is one of the difficult superfamilies of the order Hymenoptera. Much work has been done in India on parasitic Hymenoptera but it is all scattered.

The author, Dr M.S. Mani, is the noted zoologist of India. His expertise has been utilized in compiling the present voluminous work, and in spite of his advancing old age, he has used his skill and mastery over the subject true to his fame.

The complete volume comprises 22 families, 324 genera and 1039 species reported so far from the Indian region (i.e. India, Pakistan, Nepal, Bhutan, Bangladesh, Burma and Sri Lanka). In some cases it has not been possible for the author to give the exact localities of occurrence of species either for not being available in literature or he could not procure material of particular species but its great usefulness to the investigators on the group is beyond doubt. For many years to come it will serve as reference book for the Indian and foreign workers on Parasitic Hymenoptera because of its standard, completeness and authenticity.

In order to avoid unwieldliness of the volume and for easy consultation, the present volume has been brought out in two parts. Part I contains the families Agaontidae, Torymidae, Leucospididae, Chalcididae, Eurytomidae, Perilampidae, Eucharidae, Cleonymidae, Miscogasteridae, Pteromalidae, Eupelmidae, and Encyrtidae, and Part 2 contains the families Signiphoridae, Aphelinidae, Elasmidae, Eurytschiidae, Elachertidae, Entedonidae, Eulophidae, Tetrastichidae, Trichogrammatidae, Mymaridae, Supplement and Index. A Host-Parasite List and a complete Bibliography on Indian Chalcids are given at the end.

Askhet Singh
Jt. Director-in-charge

PREFACE

These volumes bring together under one cover the much scattered and often almost inaccessible taxonomic descriptions of the Chalcidoidea, known so far from the biogeographical area of India.

When I began my studies on Indian Chalcids in the Zoological Survey of India, Calcutta, in 1931, there were hardly a dozen named specimens and just a single type in the country. Except for Ashmead and Schmiedeknecht, literature was simply non-existent. Chalcid taxonomic research was then certainly a fool-hardy adventure that Ramakrishna Ayyar and I had embarked on. We were virtually the only Indians engaged in insect taxonomy in India and never worked in the British Museum, London. Inevitably we made many mistakes, but we were followed by many brilliant students like Subba Rao, Alam, Agarwal, Shafee, Hayat, Joseph, Narendran and others, who have since then enormously enriched our knowledge of these insects from India. Though during all these years I have continued, with many interruptions, my interest in Chalcids, it was indeed the financial aid provided by US Department of Agriculture under the PL-480 Programme that enabled me to undertake an extensive survey of nearly the whole of India and collect several thousands of Chalcids during 1971-1981. I was then Emeritus Professor, School of Entomology, St. John's College, Agra. With most types scattered in museums and private collections in Europe and USA, flooded with vast amounts of unsorted and unnamed collections in various institutions in India and with over one thousand "known" species, many of which have actually to be rediscovered, redescribed and revised, a Fauna volume on Chalcidoidea would seem an utterly unrealizable dream. There is yet a most urgent need for precisely such a monograph, if we are at all to make any progress. These volumes are expected to fulfil this need. Even in the absence of types, it has yet been possible to describe several species from specimens. Synonymies have been brought up to date and notes on type localities, geographical distribution and hosts have been included. Keys to genera and species, though some of them are necessarily

artificial, have been given wherever possible. Most genera and species are illustrated by figures, many of which are original and others have been modified from sources suitably acknowledged in the text. In attempting the awesome task of preparing this Fauna, I have, as J.D. Hooker said of the famous Flora, merely swept up together in one place the hopelessly scattered material. With all their shortcomings, these volumes should, I hope, provide the necessary basis for further work.

I owe a deep debt of gratitude to my numerous students and research associates for invaluable help in my Chalcid studies. My special thanks are due to Dr. B.K. Tikader, Director, Zoological Survey of India, Calcutta, for suggesting this work and for constant encouragement. I am particularly thankful to Messrs P. Velayutham and C. Shrinivasan, my Research Associates, for checking of literature, for descriptions of genera and species and for their exceptional skill in the preparation of illustrations. Miss N. Bhooma, Technical Assistant, typed the rough drafts into press-ready copy, with neatness and commendable accuracy. My cordial thanks are due to the Nagaraj & Co. for their superb co-operation in course of the printing of these volumes. My sincere thanks are due to Mr Shrinivasan for his invaluable help in reading through the printer's proofs and in the preparation of Index.

M.S. MANI

Madras
Jaunary 3, 1985

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INTRODUCTION

1. CHALCIDOIDEA

1758 *Cynips* (partim), Linnaeus, *Syst. nat.*, Ed. 10[a], I., 343.

1802-05 *Diplolepaires,* Familie soixante deuxieme (partim), Latreille, *Hist. Nat. Crust. et Ins.,* XIII, 198.

1802-05 *Cynipseres,* Familie soixante-troisieme (partim), Latreille, *ibid.,* 211.

1809 *Diplolepariae,* Familia quinta (partim), Latreille, *Gen. Crust. et Ins.,* III, 15.

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1811 *Diploleparia,* Familia (partim), Spinola, *Ann. du Mus. Natur.,* XVII, 138.

1820 *Pteromalini,* Familia (partim), Dalman, *Konql. Svensk. Vet. — Akad. Handl.,* 132

1825 *Chalcidites.* Quartrieme Tribu (partim), Latereille, *Fam. Natur. d. Regne anim.,* 446.

1830 *Chalcida,* Family, Leach, *Edinb, Encycl.,* IX, 144.

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1979 *Chalcidoidea,* Krombein *et al.,* Hymen. N. America : 743-1043.

Among the various groups of parasitic Hymenoptera the superfamily CHALCIDOIDEA is the largest, taxonomically most difficult, ecologically perhaps most complex and economically also the most important. It comprises perhaps not less than 70,000 species from the world contained in about 2,500 genera, commonly distributed in all the biogeographical areas.

The chalcids are among the smallest insects and they vary in size from hardly 0.20 mm to almost 25.00 mm, but most species are 4-5 mm long. They are generally sombre black or brown, but often also vivid yellow, red or brilliant metallic-green-blue. They are basically lovers of the open bright sunshine as adults and have generally excellent powers of flight.

The Chalcids are at once distinguished from all other parasitic Microhymenoptera by the geniculate antennae with 13 or fewer segments, pronotum not curving back at the sides to touch the tegulae due to the presence of a distinct prepectus, biarticulate trochanter, fore wings with but a single vein and that too confined only to the front margin, without closed cells, the abdominal sternites sclerotized and lacking folds and the ovipositor issuing from the ventral surface, far anteriorly of the anus often close to the base of abdomen. The head is large and the thorax compact, with well developed legs, often characterized by swollen or flattened coxae, swollen serrate, pectinate or dentate femora and may also be provided with stout apical tibial spurs, correlated with their powerful jumping habits.

Like other related Microhymenoptera as adults, the Chalcids are free-living insects that hardly if ever feed, but as larvae have diverse and often highly specialized feeding habits. Most Chalcid larvae are entomophagous parasites, but phytophagy seems to have developed independently several times and is met with in totally unrelated families among otherwise typically entomophagous endoparasites. The extreme phytophagous Chalcids are the fig insects or the Agaontids. The Agaontids cannot exist in the absence of *Ficus* spp. and the latter cannot also survive in the absence of Agaontids, which are obligatory pollinators of *Ficus*. The syconia of *Ficus* and the associated Agaontids have evolved together as a single organism. Many others are inquilines in various figs. The other phytophagous Chalcids are found among Torymidae, Eurytomidae, Brachyscelidiphaginae, Tanaostigminae, Perilampidae and extremely rarely among Eulophidae. Some of the phytophagous species tunnel inside stems, nuts and fruits like *Tetrasema, Eurytoma samsonowi* in the kernel of apricots, almonds, etc., or are specialized spermophagous forms that feed on seeds of legumes.

The parasitic Chalcids attack the eggs and larvae and sometimes also the pupae of diverse insects including other Chalcids, but mostly Lepidoptera, Coleoptera, Diptera, Orthoptera, Hymenoptera, Heteroptera, Homoptera, Blattaria, Mantodea, Odonata, etc. Some species are parasitic in spiders and ticks.

Parasitism among insects attains perhaps its maximum development and diversification in Chalcids. Primary parasitism is the most common, but hyperparasitism is also very frequent and indeed reaches even tertiary and quaternary levels. Some Chalcids like the polyphagous *Dibrachys cavus* are generally primary parasites, but can become facultatively hyperparasite. Perhaps the most

unusual type of hyperparasitism is known in certain *Coccophagoides, Coccophagus, Encarsia* and *Prospaltella,* the males of which develop as parasites of their own females, which are themselves primary parasites of Coccids. Multiparasitism and superparasitism are not infrequent.

While many parasitic Chalcids are polyphagous, most others typically show a more or less pronounced tendency for oligophagy and even monophagy, with strict host specificity. A high degree of host specificity is illustrated in *Podagrion* parasites of praying mantids eggs, *Brachymeria* spp. on Lepidoptera larvae, *Dirhinus* on larvae of muscoid Diptera, Eucharidae on ants, *Anastatus, Tetrastichus, Entedon* etc. on cockroach oothecae, Aphelinids on aphids, many Encyrtidae on Coccids, *Ixodiphagus* and *Huterellus* on ticks, *Desantisca* on spider eggs, etc. Others like *Zagrammosoma* are parasitic on leaf-mining larvae of Coleoptera, Lepidoptera or Diptera and *Diglyphus* on leaf-mining Agromyzids,*Thripocetnus* is parasitic on thrips.

Polyembryony is known in *Copidosoma*-group of Encyrtidae. Parthenogenesis is widespread and appears as arrhenotoky, thelytoky and deuterotoky.

2. HISTORICAL

The study of Chalcids may be said to have begun with Linnaeus, who described several species under his genera *Ichneumon, Cynips,* etc. Later, the names of Swederus, Fabricius, Dalman, Dahlbom, Thomson, Förster, Mayr, Motschulsky, Haliday, Westwood, Walker, Saunders, Kirby, Riley, Howard, Ashmead and others stand out prominent as students of this group. In 1904 Ashmead published his monumental work on the classification of the Chalcidoidea and in 1909 Schmiedeknecht monographed the group in the series *Genera Insectorum* (Wytsman). Since then our knowledge of the Chalcids has been greatly augmented by the studies of Howard, Ashmead, Gahan, Rohwer and Burks from North America ; Silvestri, Masi, Grandi, Mercet, Kryger, Nikolskaya, Trjpitzin, Boucek, Graham and others from Europe and Girault from Australia; Risbeck from Africa.

The group has been greatly neglected in India. In the last century, Saunders and Westwood described several fig-inhabiting Chalcids from Ceylon and India. Numerous other Ceylonese Chalcids were also described by Walker, Motschulsky and Howard. Kirby and Ashmead also described a few Indian forms. In 1898 Dalla Torre listed about thirty species of Chalcids from India in his *Catalogus Hymenopterorum.* Several more species were later described by Cameron from India. Ramakrishna Ayyar made extensive collections of Chalcids, which were described by Gahan, Rohwer, Weld, Ferriére and others ; Ramakrishna Ayyar also published check-lists of Indian chalcids. I became interested in the

group in 1931, when I reared a number of *Brachymeria, Tetrastichus, Eurytoma,* etc. from various plants galls, collected in different parts of India. Since then I have continued my chalcid studies with many interruptions. In 1939 I listed the Chalcids known till then from India in the Catalogue of Indian Insects. In recent years the intensive studies of many devoted students like Subba Rao, Alam, Agarwal, Shafee, Hayat, Joseph, Narendran and others have materially enriched our knowledge of the group in India. Over 900 species are perhaps described so far from India.

3. CHARACTERS OF TAXONOMIC IMPORTANCE

As in nearly all insect groups, the characters commonly employed in the classification and taxonomic descriptions of the Chalcids are modifications of external features of the head, especially the antennae, thorax, wings, middle and hind legs, abdominal petiole, ovipositor, sculpture of body and only exceptionally the body colour

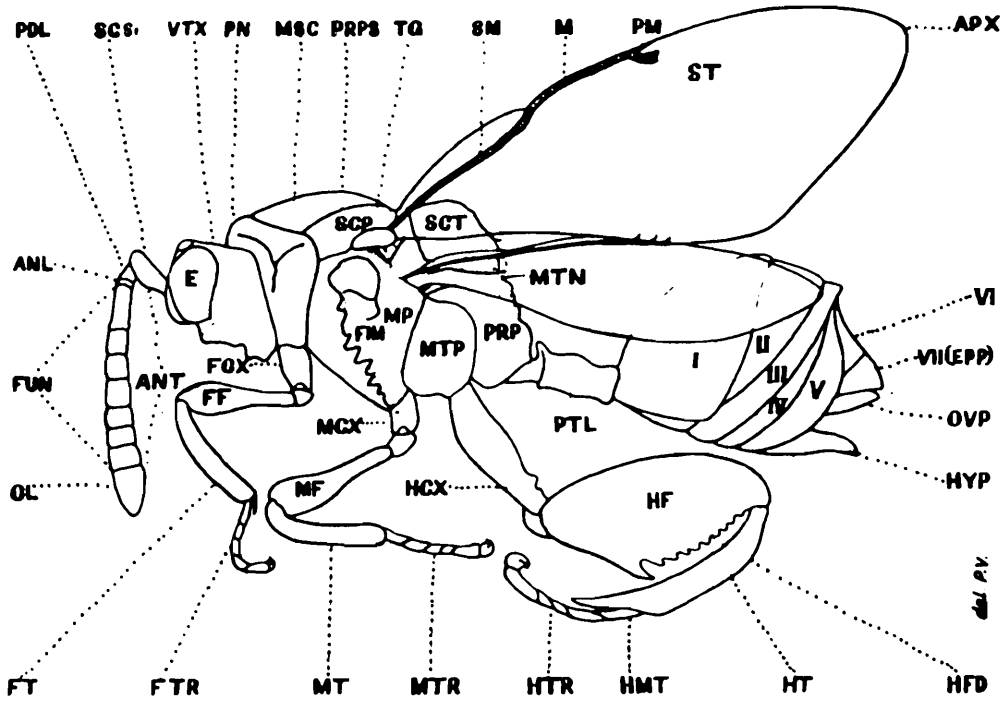

FIG. 1. Diagrammatic representation of a generalized chalcid, *Chalcis sispes* (Linn.), female, lateral view; ANL. Annellus; ANT Antenna; APX. Wing apex; CL. Club; E. Eye; EPP. Epiproct; FCX. Fore coxa; FF. Fore femur; FIM. Femoral impression; FT Fore tibia; FTR. Fore tarsus; FUN. Funicle; HCX. Hind coxa; HF. Hind femur; HFD. Hind femoral dentition; HMT Hind metatarsus; HT Hind tibia; HTR. Hind tarsus; HYP. Hypopygium; M. Marginal vein; MCX. Middle coxa; MF. Middle femur; MP. Mesopleura; MSC. Mesoscutum; MT Middle tibia; MTN. Metanotum; MTP. Metapleura; MTR. Middle tarsus; OVP. Ovipositor; PDL. Pedicel; PM. Postmarginal vein; PN. Pronotum; PRP. Propodeum; PRPS. Parapsidal furrows; PTL. Petiole; SC. Scape; SCP. Scapula; SCT Scutellum; SM. Submarginal vein; ST Stigmal vein; VTX. Vertex.

The common external structural peculiarities typical of Chalcids are shown semi-diagrammatically in fig. 1. The body is generally compact, slender but sometimes also compressed and rarely depressed, stout or conspicuously attenuated and elongated. The divisions of the body into head, thorax and abdomen and their principal sclerites and appendages are always distinct.

The Chalcids are uniformly coloured yellow or brown, or black, but often bright metallic-green-blue and spotted and characteristically marked white, yellow, red brown or black. The wings are most usually hyaline, but very often infumate, banded or conspicuously

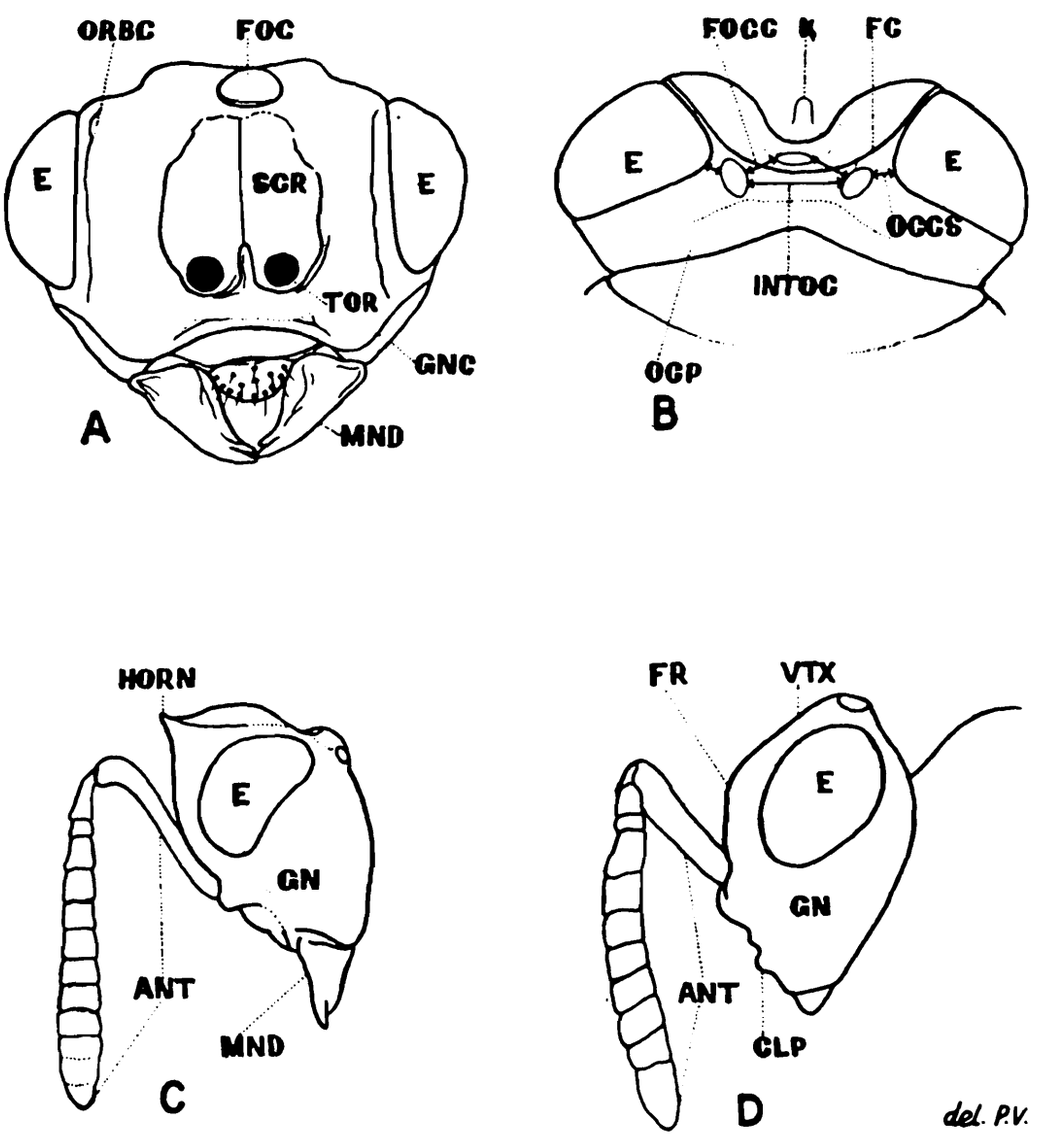

FIG. 2. A. Anterior view, *Brachymeria vicina* (Walker), female; B. Dorsal view, *Antrocephalus hofferi* Boucek, female; C. Lateral view; *Dirrhinus hesperidum* (Rossi), female; D. Lateral view, *Chirocera pectinicornis* (Latereille), female; ANT. Antenna; CLP. Clypeus; E. Eye; FC. Frontal carina; FOC. Front ocellus; FOCC. Front ocellar space; FR. Frons; GN. Gena; GNC. Genal carina; HORN. Horn; INTOC. Interocellar space; K. Facial keel; MND. Mandible; OCCS. Ocellocular space; OCP. Occiput; ORBC. Orbital carina; SCR. Scrobe; TOR. Toruli.

spotted. The vestitute consists of fine pubescence, scattered setae and bristles, silvery-white hairs or also tufts of stout black bristles and verticillate bundles of long hairs, specially on the antennae in the males. The surface is generally smooth and shiny, but most often finely and characteristically minutely pitted, striate, reticulate, rugose, umbilicately punctate or also more or less strongly carinate. The punctae may be distinctly separated by more their own diameters or may also be close and contiguous and the other sculpture may be fine or coarse.

The head is always well developed, usually hypognathous, lenticular, biconvex or globose, but sometimes depressed, oblong and pronathous as in Agaontidae. In some forms like Dirhinini, the head is produced in front into conspicuous odontoid or spinous processes; strongly carinate or even keeled with the scrobes and occiput deeply excavate as in *Antrocephalus.* The vertex is usually rounded, sometimes flat, usually emarginate behind, but also strongly margined. The gena with its sulcus is most usually distinct and its proportion to the length of eye provides valuable taxonomic

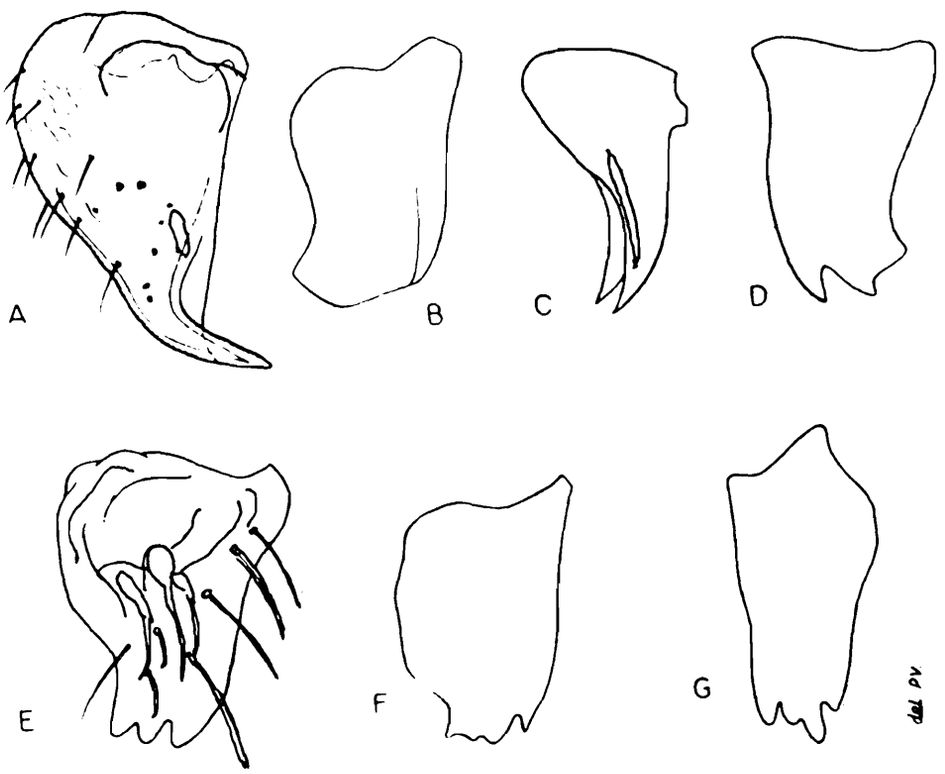

FIG. 3. Mandibles : A. Unidentate, *Carabunia myersi* Waterston; B. Edentate, *Prionomitus mitratus* (Dalman); C. Bidentate, *Callipteroma quinqueguttatum* Motschulsky; D. Bidentate with a truncature, *Psyllaephagus longiventris* Trjapitzin; E. Tridentate, *Echthroplexiella popovi* Trjpitzin; F. Quadridentate, *Anabrolepis zetterstedti* (Westwood); G. Quadridentate, *Mercetencyrtus ambiguus* (Nees).

differences. The compound eyes are most usually well developed, either glabrous or more or less finely pubescent, sometimes with the inner orbital margin strongly carinate, sinuate or converging above. Sometimes the eyes are reduced. Three ocelli are generally common and are arranged in diverse triangles, with the lateral ocelli remote from or contiguous with the eye border. The distance between the eye border and the lateral ocelli is the ocellocular space; interocellar space measures the distance between the lateral ocelli; the front ocellar space refers to the distance between one of the lateral ocelli from the front ocellus and the ocelloccipital space indicates the distance of the lateral ocelli from the occipital margin of the vertex behind. The front ocellus is sometimes situated just within the upper end of the deep scrobes and this character serves to distinguish some genera. Fig. 2 illustrates the taxonomic characters of the head.

The taxonomically important appendages of head are the mandibles, maxillary and labial palpi and the antennae. The modifications of the mandibles are illustrated in fig. 3. The mandibles are typically dentate, but the teeth may be large or minute. In Eucharidae the mandibles are elongate and falcate. In other chalcids the mandibles are elongate and falcate. In other chalcids the mandibles are bidentate, tridentate or truncate and partly dentate and truncate and these differences provide important basis for the classification of Encyrtidae. In certain Pteromalidae the right and left mandibles may be differently provided with 3 or 4 teeth. In the Agaontidae the mandibles bear characteristically large lamellate or pectinate lateral appendages (Fig. 11, 12). The maxillary palpi are usually with 4, but sometimes with only 3,2 or even single segment and the labial palpi are typically triarticulate but may also to biarticulate or uniarticulate.

The antennae (Figs. 4, 5, 6) are taxonomically very important and at once separate the Chalcids from the Ichneumonoidea, Cynipoidea and Proctotrupoidea by being geniculate at the scape-flagellum articulation. The flagellum is distinguished into pedicel, one or more minute and transverse ring segments or annelli, funicle of variable number of segments and a club. The antennal sockets are called toruli and may be closely approximated or differently separated. The antennae are inserted close to the mouth border or higher up on the face, below, on or above the level of the lower orbital borders (an imaginary line drawn from the bottom of eye). The antennae are often received in a more or less deep longitudinal groove or scrobe. The flagellum is clothed with diverse setae, bristles and sensoria (Fig. 4F, G, H). In some genera the antennae are characteristically short and stout and strongly clavate, but in others long, slender and setaceous and often much longer than the body as in many Mymaridae. The number of antennal segments is perhaps typically 13, but may be also few as only 3 (scape, pedicel and club) (Fig. 4H). The antennal segments are typically cylindrical, but often

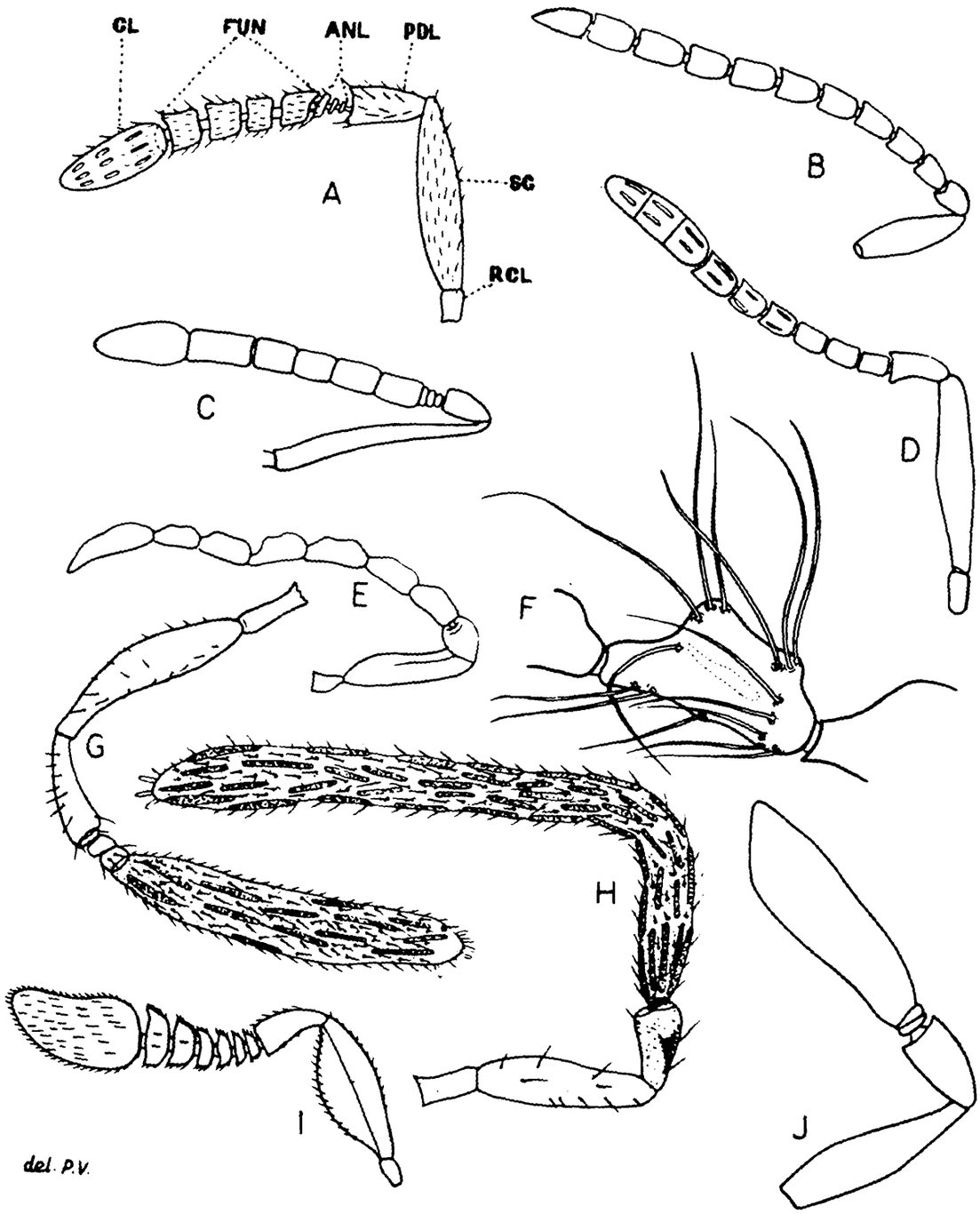

FIG. 4. Antennae : A. *Cynipencyrtus bicolor* Ishii; B. *Thomsonisca amathus* (Walker); C. *Acerophagus zamberei* Risbec; D. *Eremencyrtus unifasciatus* Trjpitzin; E. *Blastothrix britanica* Gir.; F. *Blastothrix britanica* Gir., third funicular segment; G. *Eretmocerus corni* (Haldeman), female; H. *Eretmocerus corni* (Haldeman), male; I. *Zarhopalus corvinus* (Girault); J. *Arrhenophagus chionaspidis* Aurivillius; ANL. Annelli; CL. Club; FUN. Funicle; PDL. Pedicel; RCL. Radicle; SC. Scape.

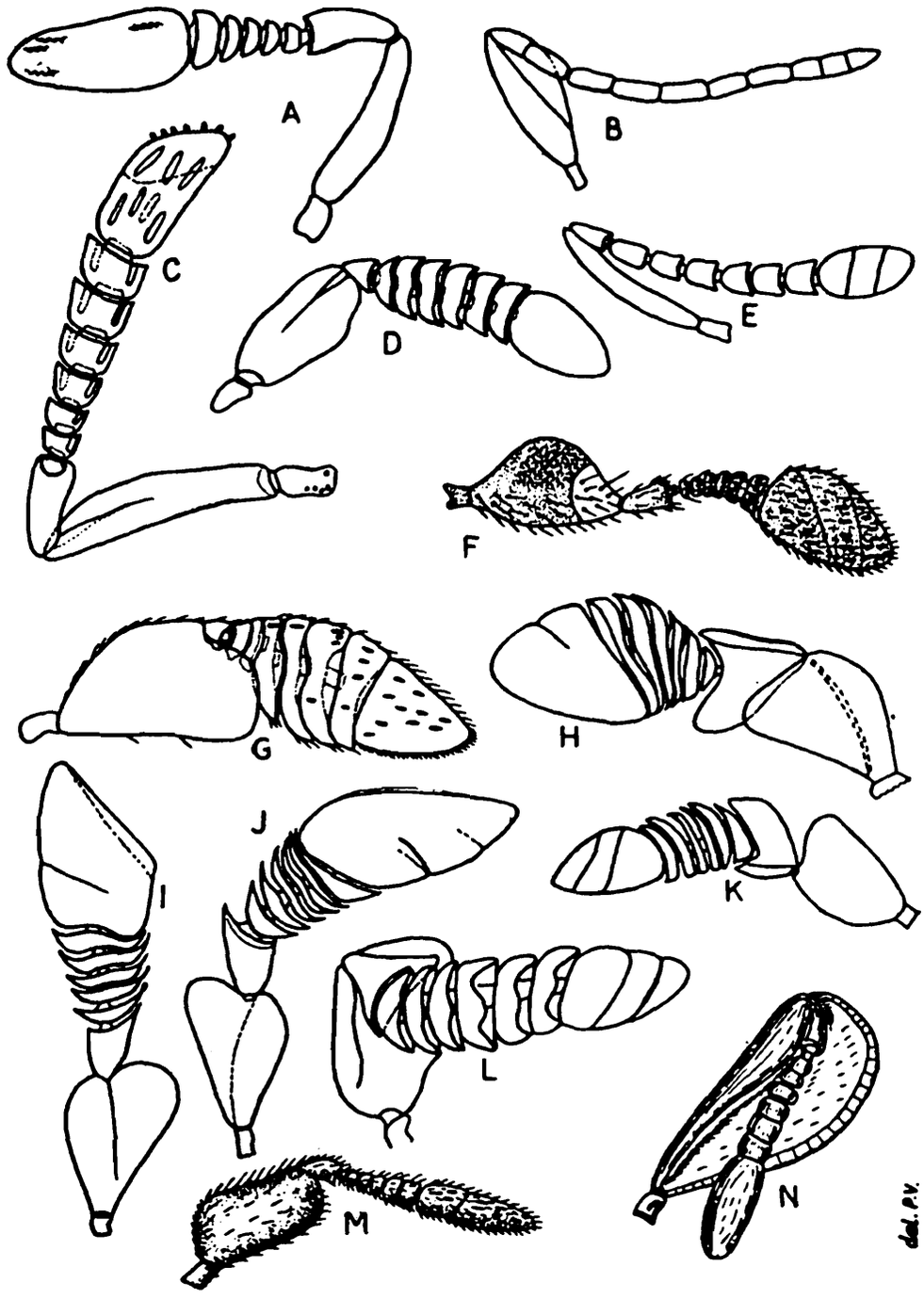

FIG. 5. Antennae : A. *Aphycinus magdalinae* Trjpitzin; B. *Dinocarsiella alpina* (Girault); C. *Echthroplexiella popovi* Trjpitzin; D. *Tetracnemus pulchripennis* (Mercet); E. *Discodes coccophagus* (Ratzeburg); F. *Aenasius advena* Compere; G. *Leurocerus ovivorus* Crawford; H. *Anicetus integrellus* Trjpitzin; I. *Anicetus cavus* Trjpitzin; J. *Anicetus annulatus* Trjpitzin; K. *Cerapteroceroides similis* (Ishii) L. *Cerapterocerus mirablis* Westwood; M. *Acroaspidia myrmicoides* Compere; N. *Chrysoplatycerus ferrisi* Timberlake.

the scape and even the funicular segments are compressed, foliaceously or lamellately expanded (Fig. 5), or provided with pectinate processes or filamentous or lamellate, single or double lateral branches on the funicular segments as in *Cheirocera,* Eucharidae and specially in the males of some Encyrtidae, Elasmidae and Eulophidae. The club is typically triarticulate, usually symmetrically but often also obliquely and unequally segmented or even solid and greatly swollen.

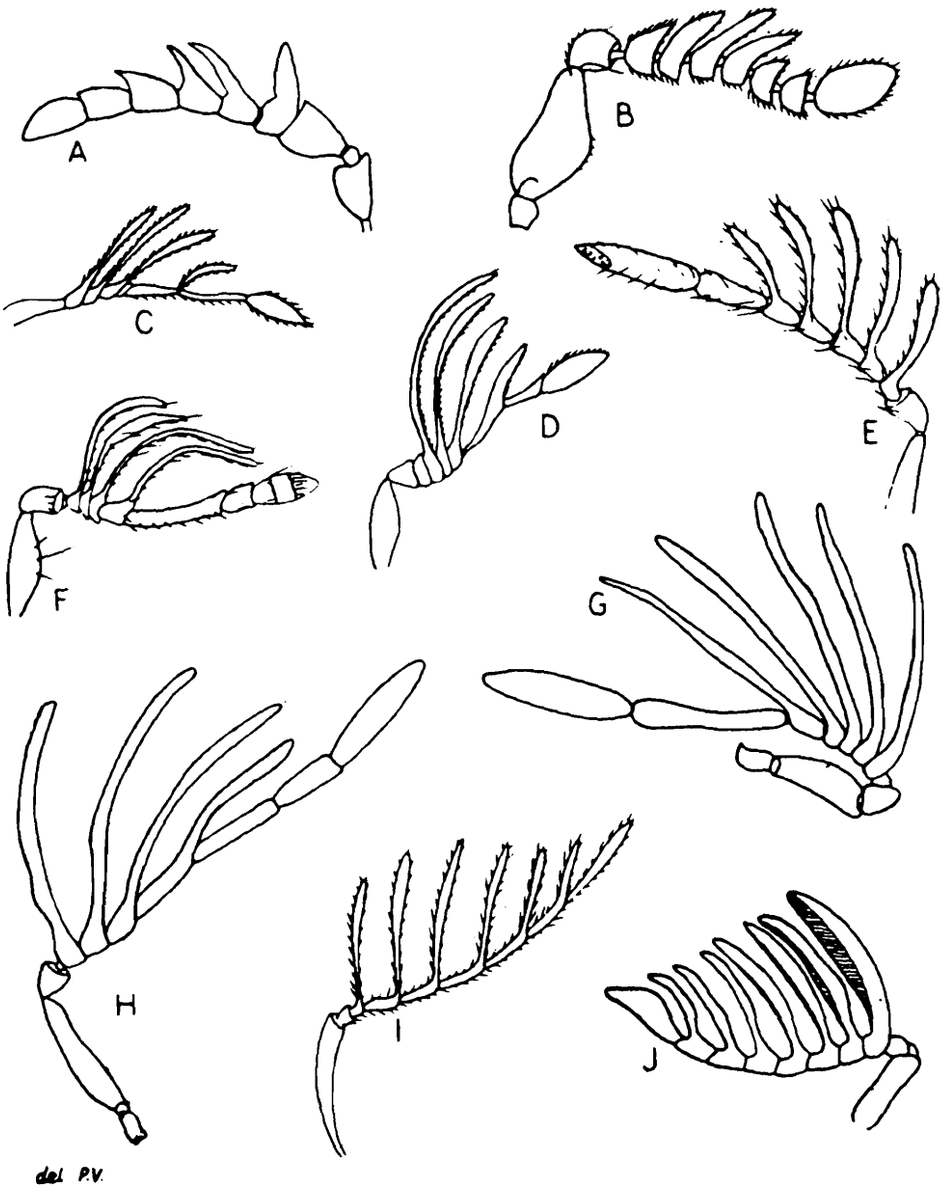

FIG. 6. Branched antennae of males : A. *Psyllaephagus exiguus* Riek; B. *Coelopencyrtus kaalae* (Timberlake); C. *Tetracnemus diversicornis* Westwood; D. *Tetracladia texana* Howard; E. *Pentacnemus bucculatricis* Howard; F. *Tanaostigma coursetiae* Howard; G. *Pentacladocerus arraraticus* Trjpitzin; H. *Paracopidosoma erdoesi* (Trjpitzin); I. *Hexacladia smithi* Asmead; J. *Chirocera pectinicornis* (Latreille).

The thorax (Fig. 7) is always well developed, robust, usually somewhat compressed, but occasionally also depressed. The

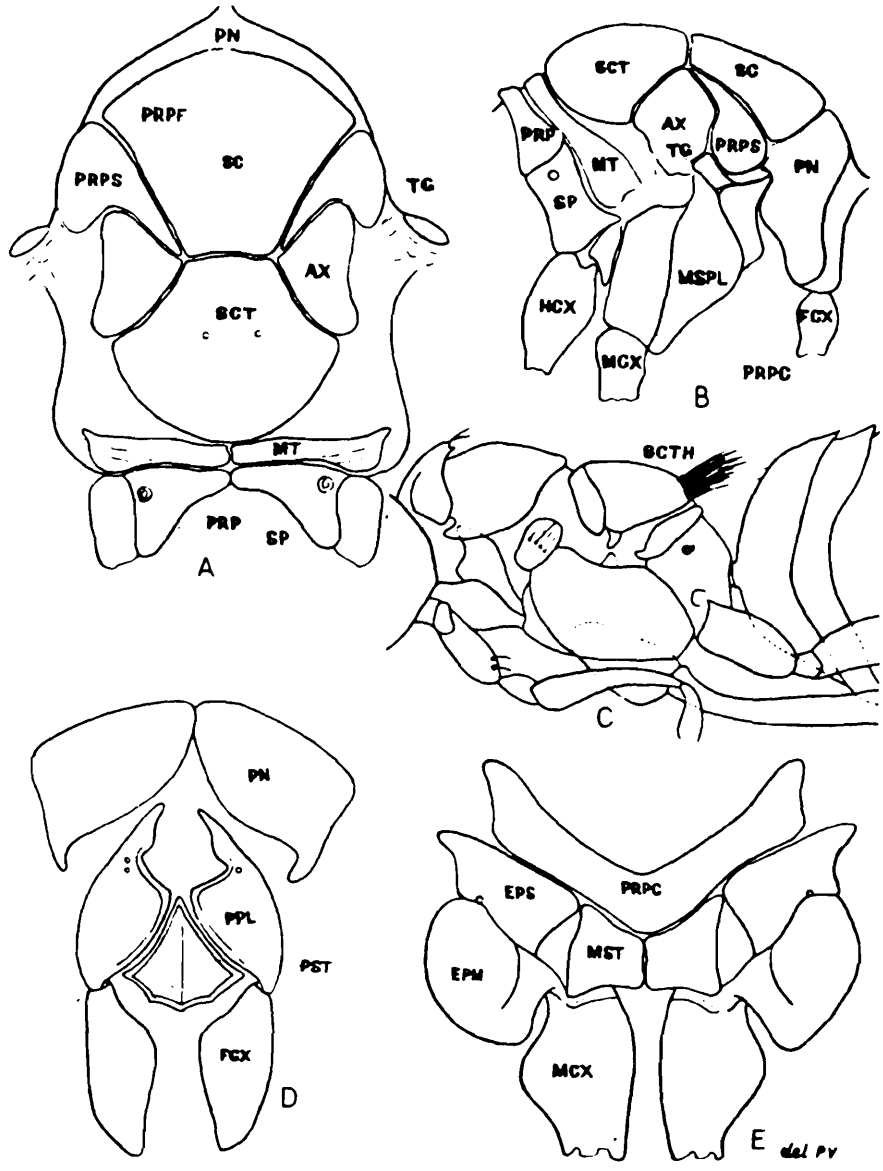

FIG. 7. Thorax : A. Dorsal view, *Coccophagus pernigritus* Blanchard, female; B. Lateral view, *Coccophagus lycimnia* (Walker), female; C. Lateral view, *Encyrtus lecaniorum* (Mayr), female; D. Ventral vein, *Coccophagus pernigritus* Blanchard, female; AX. Axilla; EPM. Epimeron; EPS. Episternum; FCX. Fore coxa; HCX. Hind coxa; MCX. Middle coxa; MSPL. Mesopleura; MST Mesosternum; MT. Metanotum; PN. Pronotum; PPL. Propleura; PRP. Propodeum; PRPC. Precepctus; PRPF. Parapsidal furrows; PRPS. Parapsides (Scapula); PST Presternum; SC. Scutum; SCT Scutellum; SCTB. Scutellar brush; SP. Spiracle; TG. Tegula.

pronotum is usually short, narrow and transverse, but in Agaontidae, Torymidae, Chalcididae, Eurytomidae and Perilampidae rather subquadrate, but never reaches behind at the sides to meet the tegulae. In certain Cleonymidae it is prolonged in front into a neck. Its front margin may be emarginate or carinate or keeled. The mesonotum is generally differentiated into scutum and scapula, with well developed parapsidal furrows, which may however be faint or incomplete or only indicated anteriorly. The scutellum is always distinct and sometimes exceptionally elongated like a shield over the abdomen (*Scutellista*). It is often separated by a transverse frenum into an anterior and a posterior area. It often also bears paired parallel longitudinal grooved lines (*Tetrastichus*). Sometimes as in *Cheiloneurus* the scutellum bears a subapical tuft of long setae or brush. The scutellum is produced behind into an obtuse odontoid process or into an elongated spine or also a forked plate as in *Acantheurytoma*, Perilampidae and Eucharidae. The axillae are distinct and lie behind an imaginary line drawn across from tegula to tegula or on the line or are also triangularly advanced in front of it into the region of the scapula as in Elasmidae, Eulophidae, Tetrastichidae, etc. The axillae of the two sides are generally distinctly separated, but in some Encyrtidae are contiguous or also confluent. The mesopleura has mostly a more or less deep femoral impression, often striated or punctate or rugose, but in Eupelmidae and Encyrtidae strongly convex and bulging, without the femoral impression. The metathorax is always inconspicuous, the propodeum provides very important taxonomic differences. The shape, size, position of the propodeal spiracles, the spiracular sulci, the presence or absence and shape of median longitudinal carinae, areola and the short neck-like nucha projecting behind in between the hind coxae on the propodeum serve to distinguish genera and species. The propodeum is sometimes clothed with characteristically dense silvery-white pubescence. It is mostly gently sloping behind from the rest of the thorax, but sometimes also abruptly declivous. The posterolateral angles of propodeum are often produced into one or more odontoid spines.

The wings are very characteristics for the drastic reduction of veins a single longitudinal vein lies close to or on the front margin and hardly ever reaches beyond the basal half of the wing. There are no cross veins and no closed cells. The fore wing is always larger than the hind wing, generally broad and rounded, but sometimes narrow and elongate and even pedunculate (Mymaridae). The hind wing is smaller than the fore wing and is provided typically with 3 frenal hooks at the tip of the single vein in front margin. In some Agaonids and Mymarids, the hind wings are modified into filamentous or hairy vestiges. The wings are generally well developed, but brachypterous and apterous conditions are not infrequent. The wing surface is clothed with scattered discal cilia, which may sometimes be arranged in regular rows as in *Trichogramma* or in

certain Mymarids. Hairless clear basal areas and hairless often obliquely transverse speculum are common among Encyrtidae and Aphelinidae. The marginal fringe is usually short, but in certain Aphelinidae and Mymaridae conspicuously long and indeed much longer than the width of the wing disc.

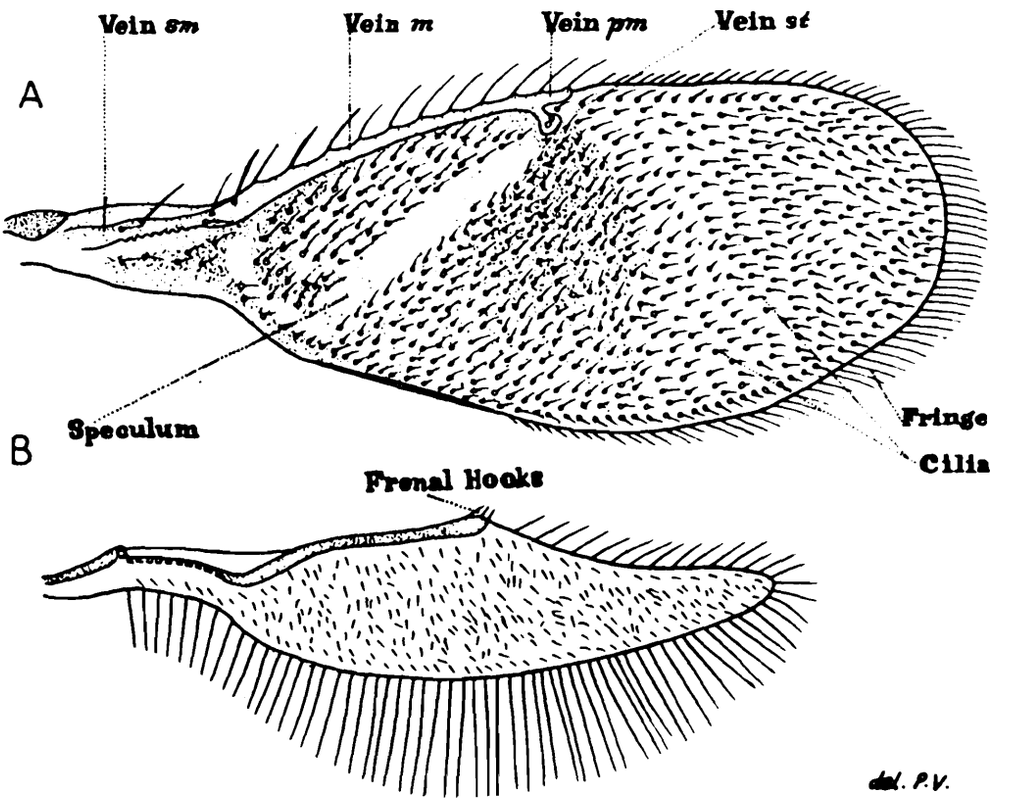

FIG. 8. Wings : *Aphytis proclia* (Walker) ; A. Fore wing ; B. Hind wing.

The single vein is differentiated into a basal submarginal vein (*sm*), continued as the marginal vein (*m*) along the costal margin, with a posteriorly directed, short, subperpendicular stump or stigmal vein (*st*), ending in a more or less short or long postmarginal vein (*pm*). The relative proportions of these various vein segments are of great taxonomic importance. The area in front of *sm* is always narrow and is the so called costal cell, which in *Oedaule* is broadly rounded. The vein *sm* may pass into *m* without an abrupt break or discontinuity or it may be interrupted, abruptly narrowed and sharply angulated just before the begining of vein *m*. In certain Encyrtidae the vein *m* is often greatly reduced and punctiform or as in certain Eurytomids and in *Pachyneuron* and other related genera the vein *m* may be conspicuously stout and broad. The stigma is large and rounded in Megastigminae (Torymidae), but otherwise generally small and pyriform. The vein *pm* is often reduced to a stump or also totally absent.

The legs are variously modified. The fore and hind legs are generally stout and strongly developed and the middle legs weak in

Agaontidae, but the middle legs are conspicuously stronger, stouter, elongated and saltatorial, with stout and long tibial spurs and dentate or pectinate tarsal segments in Eupelmidae and Encyrtidae. The fore femora are swollen and armed with teeth in some Cleonymidae. The hind coxae are enlarged and circularly flattened in Elasmidae.

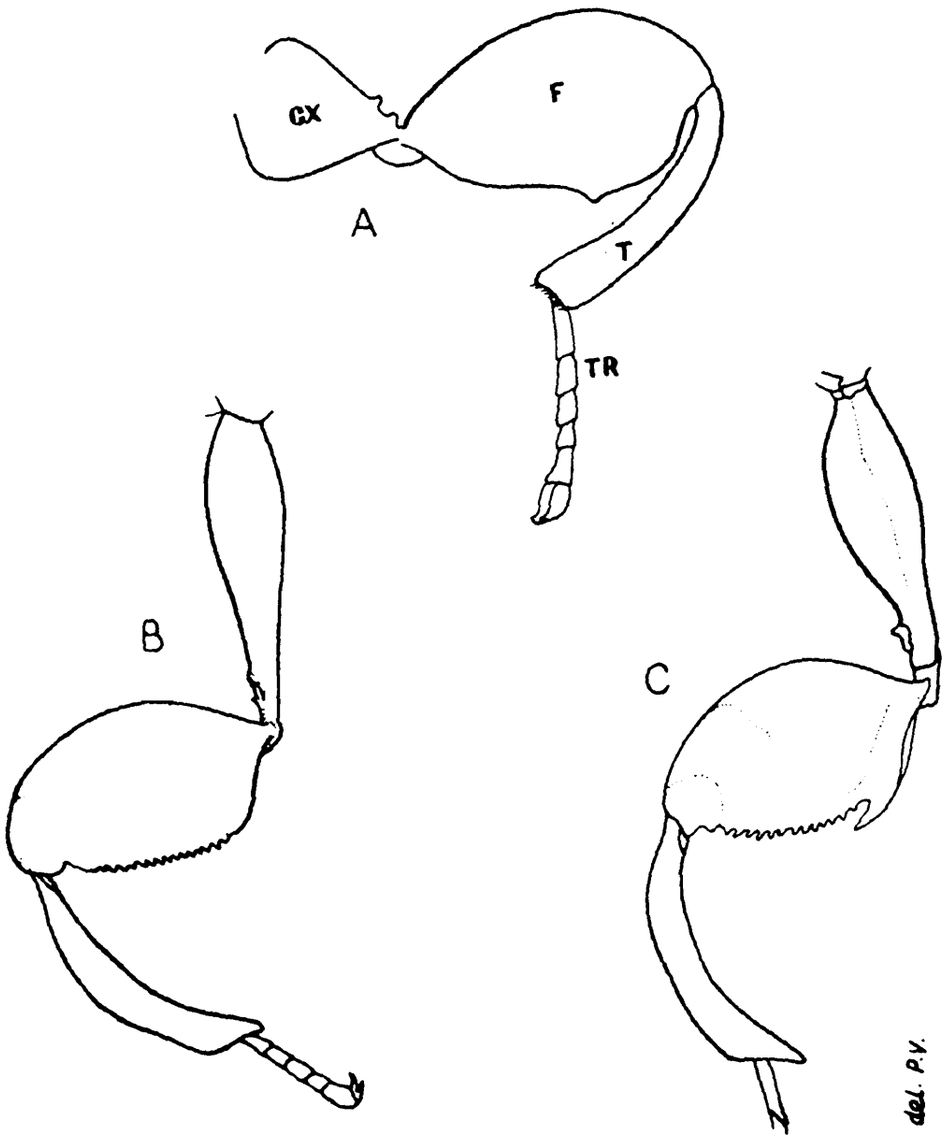

FIG. 9. Hind legs : A. *Betaspidia obscura* MS, female; B. *Spilochalcis xanthostigma* (Dalman), female; C. *Chalcis myriflex* (Sulz.), female; CX. Coxa; F. Femur; T Tibia; TR. Tarsus.

Among Leucospididae, Chalcididae, Podagrioninae and certain other Cleonymids the hind femora (Fig. 9) are greatly enlarged, swollen, biconvex or subglobose, serrate, pectinate or dentate ventrally. In Chalcididae, especially *Brachymeria* - complex the hind tibiae are strongly arched and fit into shallow groove in femora and apically

produced into a obtuse spine. The hind tibiae and tarsi are often laminately flattened or are provided with such expansion in certain Eupelmidae and Encyrtidae. The tarsus is typically five segmented, but somes only 4 or 3 segments are found and heteromerous condition is not infrequent. The proportions of tarsal segments, especially the metatarsus and tibial spurs are useful as generic or specific characters.

The abdomen (Fig. 10) is highly specialized and the tergites and sternites do not correspond, as several of the latter are reduced or telescoped into the ones in front. The abdomen is sessile in the

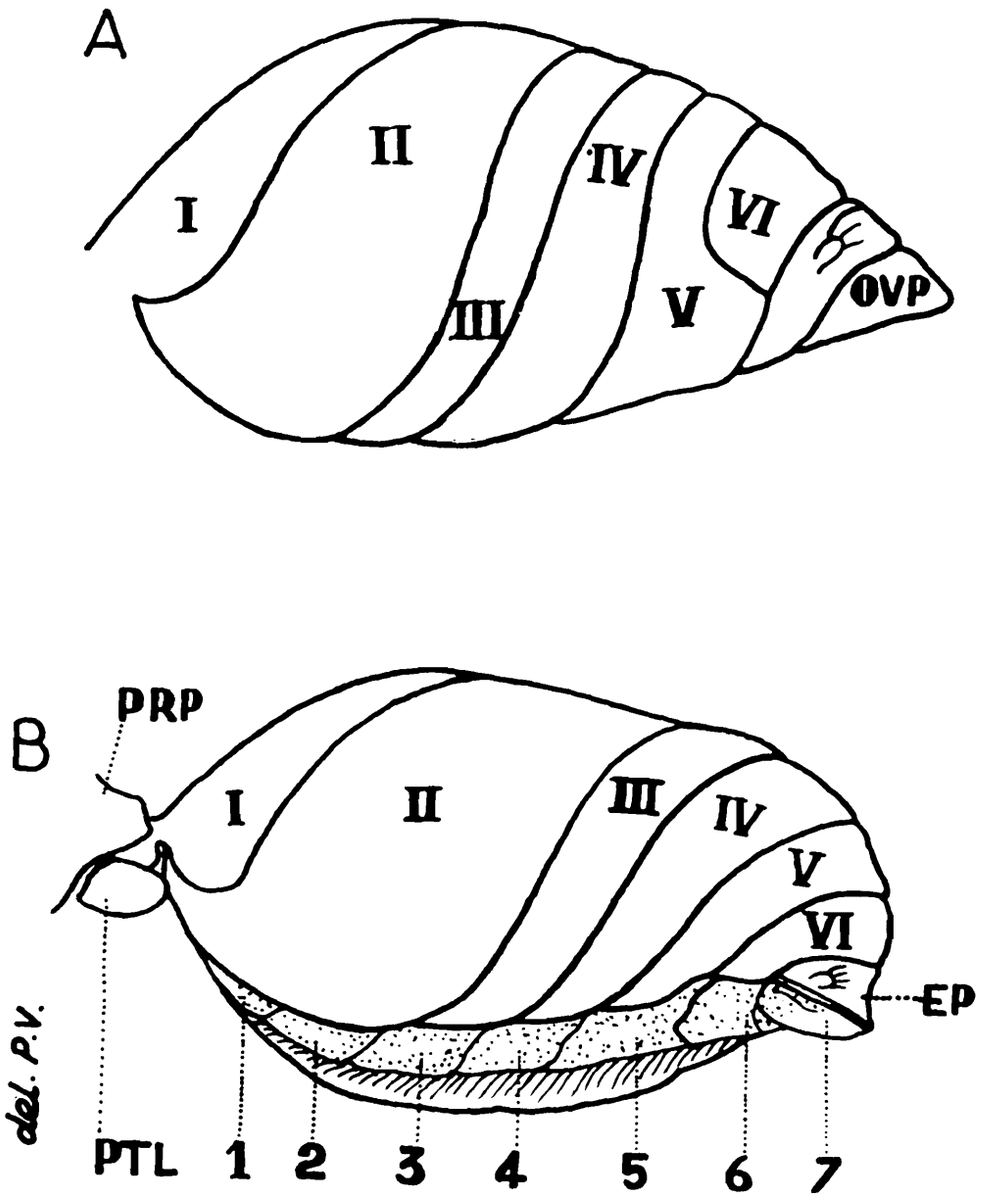

FIG. 10. Abdomen : *Oxycoryphus indescripta* (Boucek); A. Female; B. Male; Roman numerals tergites; Arabic numerals sternites; EP. Epiproct; OVP. Ovipositor; PRP. Propodeum; PTL. Petiole.

absence of a petiole. Elongate petiole is met with in *Epitranus, Spilochalcis,* Eucharids and many other genera. The petiole is most usually inserted near hind margin of the propodeum between the hind coxae, but sometimes far anteriorly above the hind coxae as in Evaniids. The body of abdomen is most usually globose, oval or elongate subcylindrical or strongly laterally compressed as in *Eurytoma* and peculiarly tubularly produced behind as in *Solenura.* The ovipositor is concealed or partly exserted and sometimes even longer than body as in *Podagrion, Phlebopenes* etc. The tergites are generally smooth, but in *Ormyrus* provided with a transverse row of large pits or may be uniformly punctate. The male genitalia sometimes serve to distinguish species, but have not been extensively studied so far

4. CLASSIFICATION

The first comprehensive classification of Chalcids was proposed by Ashmead in 1904, who recognized 14 families : Agaontidae, Torymidae, Chalcididae, Eurytomidae, Perilampidae, Eucharidae, Cleonymidae, Miscogasteridae, Pteromalidae, Encyrtidae, Elasmidae, Eulophidae, Trichogrammatidae and Mymaridae. This classification was basically followed by Schmiedeknecht in 1909 in Wytsman's *Genera Insectorum* except that the superfamily Chalcidoidea was treated by him as a family and all Ashmead's families as subfamilies and subfamilies as tribes. In 1932 Nikolskaya recognized 24 families, by raising some Ashmead's subfamilies to family status. In 1979 Krombein's Catalogue of North American hymenoptera only 11 families are listed as a result of lumping together many Ashmeadian families. Despite its many errors, Ashmead's system is even today basically sound and is adapted in this volume, with slight modifications. I recognize in this volume 22 families, readily separated according to the following key.

5. KEY TO FAMILIES

1 Hind wing exceedingly narrow, elongate, pedunculate 25

Hind wing not exceedingly narrow, elongate and pedunculate 2

2. Axillae triangularly advanced forwards of tegulae into scapulae; fore tibial spurs small; tarsi usually with 3-4, rarely 5 segments or heteromerous 17

Axillae not triangularly advanced into scapulae; fore tibial spurs large; tarsi with 5, rarely 3-4 segments (in apterous males) 3

3. Head in female oblong, depressed; with a deep wide longitudinal furrow; mandibles or palpi usually with serrate appendages; fore and hind legs stout; tibia much shorter than

femur; middle legs slender or vestigial; males apterous, with abdomen tubularly elongate — *Agaontidae*

Head not oblong; without a deep median furrow; mandibles and palpi without appendages; males rarely apterous, if so then abdomen not tubular — 4

4. Mesopleura without femoral impression but convex and large, rarely impressed in some males; middle tibial spur long, stout — 14

Mesopleura not convex, with a femoral impression; middle tibial spur not exceptionally different from others — 5

5. Hind tibial spurs double; if rarely single, then vein *st* ending in a large stigma and ovipositor long — 6

Hind tibial spur single; ovipositor usually short, if rarely long then stigma small — 16

6. Mandibles falcate, with 1—2 teeth; thorax largely arched upwards, gibbous; scutellum usually abnormally large, elevated, produced behind; axillae connate, not separate from the surrounding area — 12

Mandibles usually not falcate, with 3—4 teeth; if rarely falcate, then thorax not gibbous; scutellum normal; axillae distinct — 7

7. Hind coxae very much larger than others — 8

Hind coxae rarely larger than fore coxae; if exceptionally large, then pronotum and hind legs long; vein *pm* long; ovipositor usually concealed — 10

8. Hind coxae subtriquetrous, compressed to form an acute ridge above; hind femur exceptionally swollen, sometimes with 1—2 teeth beneath; abdomen subcompressed, rarely depressed; vein *st* very short — *Torymidae*

Hind coxae usually elongate, subcylindrical; hind femora conspicuously swollen, dentate or serrate beneath; hind tibiae arcuate — 9

9. Fore wings longitudinally folded; ovipositor curving upward and forward over the dorsum of abdomen — *Leucospididae*

Fore wings not longitudinally folded; ovipositor if long, never curved forward over the dorsum of abdomen — *Chalcididae*

10. Pronotum rarely transversely quadrate, usually conical or short, transverse, rarely as wide as mesonotum — 13

Pronotum large, quadrate, as wide as mesonotum . . . . . — 11

11. Pronotum long quadrate or subquadrate; abdomen in female not triangular, second tergite never very large; hypopygium ploughshare shaped — *Eurytomidae*

Pronotum short, as wide as mesonotum; abdomen in female triangular, with tergites 2—3 very large and covering most of dorsum; hypopygium not prominent — *Perilampidae*

12. Second tergite very large, enclosing other following tergites; coxae globose; vein *st* hardly distinct; scutellum usually produced behind into a spinous or forked process — *Eucharidae*

13. Mesepisternum small; fore femora never swollen; vein *m* in hind wing long, costal cell not reaching frenal hooks; vein *st* well developed — *Miscogasteridae*

Mesepisternum large, triangular; fore or hind femora swollen, sometimes toothed or the hind femora swollen and toothed; if legs slender, then hind legs very long, vein *st* in fore wing very short, *pm* extending to wing tip — *Cleonymidae*

14. Mesonotum usually depressed or impressed; rarely convex; parapsidal furrows never absent, but at least indicated; vein *m* usually long .. ... — *Eupelmidae*

Mesonotum convex or nearly so; parapsidal furrows absent — 15

15. Vein *m* punctiform, much shorter than *sm*; scutellum not transverse; middle tibiae without lateral spurs — *Encyrtidae*

Vein *m* long, as long as *sm*; scutellum transverse linear; middle tibiae with lateral spurs — *Signiphoridae*

16. Mesonotum subconvex; parapsidal furrows complete or incomplete; hind coxae never larger than others; axillae always separate — *Pteromalidae*

17. Hind coxae abnormally large, flattened and dilated; hind femora flat, compressed; tarsi long; mesopleura not impressed — 18

Hind coxae normal, not enlarged and flattened; mesopleura impressed — 19

18. Antennae in male branched; vein *m* in fore wing extremely long; parapsidal furrows absent — *Elasmidae*

Antennae in male not branched; vein *m* in fore wing not extremely long; parapsidal furrows present — *Euryischiidae*

19. Tarsi with 4-5 segments, sometimes heteromerous; fore wings not short and broad; discal cilia not in lines — 20

Tarsi with 3 segments; fore wings broad, broadly rounded apically; discal cilia often in lines — 24

20. Fore wing vein *sm* not distinctly broken before curving to front margin, or not with the basal part abruptly thinner than the short curved apical part, usually as long as or longer than vein *m; st* rarely short; *pm* always present — 21

Fore wing with *sm* broken before curving to margin, or the long basal part abruptly thinner than the curved apical part, usually shorter than vein *m*; vein *st* only moderately long, usually short; *pm* often absent. — 22

21. Parapsidal furrows well developed. — *Elachertidae*

Parapsidal furrown incomplete, indicated only in front or even absent. *Eulophidae*

22. Fore wing with vein *sm* very short, *m* very long, *pm* variable. *Entedonidae*

Fore wing with vein *sm* not very short, usually longer than *m*; *pm* absent. 23

23. Vein *st* very short or obsolete, stigma sessile or subsessile; mesopleura usually not impressed *Aphelinidae*

Vein *st* distinctly present, stigma never sessile ; mesopleural impression distinct. *Tetrastichidae*

24. Fore wings with veins *m* and *st* united to form a backward strong arch. *Trichogrammatidae*

25. Pronotum large, conically produced in front or rounded; wings most usually with long marginal fringe, almost without veins; tarsi with 4-5 segments; antennae usually with a distinct club. *Mymaridae*

FAMILY AGAONTIDAE

1846 *Agaonidae* (partim), Walker, *List Chalc. Brit. Mus.*, 1 : 23.
1856 *Agaonoidae,* Förster, *Hymen. Stud.*, 2 : 29.
1867 *Blastophagidae,* Kirchner, *Cat. Hym. Eur.*, 188.
1871 Agaonidae (partim), Walker, *Notes Chalcids,* 4 : 58.
1882 *Cynipidae, Sycopygides,* Saunders, *Trans. ent. Soc. London,* 6 : 20.
1897 *Agaonidae* Ashmead, *Proc. ent. Soc. Washington,* 4 : 243.
1904 *Agaonidae,* Ashmead, *Mem. Carnegie Mus.*, 1(4) : 231, 394.
1909 *Agaoninae,* Schmiedeknecht, *Gen. Ins.*, 97 : 5.
1938 *Agaonidae,* Mani, *Cat. Indian ins.*, 23 : 7, 26.
1952 *Agaonidae,*Grandi, *Boll. Inst. Ent. Univ. Bologna,* 19 : 69-96.
1979* *Agaoninae,* Krombein *et al., Hymen. N. Amer.*, 1 : 748.

Head in female oblong, with a deep, broad longitudinal furrow above; mandibles or palpi often with serrate appendages; antennae geniculate, with 1,2 or 3 annelli; scape large, long; axillae not triangularly extending into scapula; hind wings in female neither exceedingly narrow nor pedunculate; males always apterous; fore tibial spur generally small; tarsi in female with 5 segments, in male with 3-4 segments; fore and hind legs very stout, with the tibiae very much shorther than femora; middle legs slender, sometimes even aborted; abdomen in males long and tubular with the hypopygium very prominent; ovipositor emerging far anterior to the tip of abdomen. Inhabitants of figs.

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* In Krombein's catalogue (1979) the Agaontidae are treated as a subfamily of Torymidae.

KEY TO SUBFAMILIES

1. Mandibles in female with appendages, usually serrate; abdomen in female weakly compressed, ovipositor exserted; males apterous, with abdomen reduced behind and recurved under the thorax — *Agaontinae*

   Mandibles in female without serrate appendages; sometimes however the palpi with such appendage, otherwise as in Agaontinae; males apterous, with the abdomen widened behind, but narrowed basally; near tip with tubercles or long filaments on each side — *Sycophaginae*

SUBFAMILY AGAONTINAE

1882 *Cynipidae, Sycophagides* (partim), Saunders, *Trans. ent. Soc. London,* 6 : 20.
1904 *Agaoninae,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 231.
1909 *Agaonini,* Schmiedeknecht, *Gen. Ins.,* 97 : 6.
1938 *Agaoninae,* Mani, *Cat. Indian Ins.,* 23 : 27.
1979 *Agaoninae,* Krombein *et al., Hymen. N. America.* 1 : 748.

This subfamily comprises true fig insects, recognized by the characteristic shape of body, head oblong in female, mandible with complex appendage, serrated and longer than mandible; wings present in female and atrophied in male.

KEY TO GENERA

1. Females : winged — 2
   Males : apterous — 4
2. Fore wing without veins; antennae clavate, with 11 segments; the third or fourth antennal segments with a distinct process — *Eupristina* Saunders

   Fore wing with veins *m, st* and *pm;* antennae with 11-12 segments; head not elongate — 3
3. Seventh abdominal tergite with a circular or shortly ovate groove on either side — *Blastophaga* Gravenhorst

   Seventh abdominal tergite with an elongate groove on either side — *Ceratosolen* Mayr
4. Basal part of antennae enclosed in a canal in the head; eyes minute or totally absent; fore and hind femora stout, compressed; fore tarsi biarticulate — *Ceratosolen* Mayr

   Basal part of antennae free, not enclosed in a canal — 5
5. Fore tarsi not received in a groove in tibiae — 6
6. Fore tarsi with 5 segments — 7

   Fore tarsi with 2-3 segments — 8
7. Thorax campanulate; antennae with 3-4 segemtns and one annellus — *Eupristina* Saunders
8. Fore tarsi with 2 segments; antennae with 6 segments; head about 2 times as long as wide — *Ceratosolen* Mayr

   Fore tarsi with 3 segments; antennae with 13 segments; head not much longer than wide — 9
9. Head only a little longer than wide; hind tarsi very long, more than 2 times tibiae — *Blastophaga* Gravenhorst

Eupristina Saunders

1883 *Eupristina,* Saunders, *Trans. ent. Soc. London,* 5.
1904 *Eupristina,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 233, 234.
1909 *Eupristina,* Schmiedeknecht, *Gen. Ins.,* 97 : 4.
1916 *Eupristina,* Grandi, *Boll. Lab. Zool. Portici,* 11 : 207-218.
1935 *Eupristina,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 230.
1938 *Eupristina,* Mani, *Cat. Indian Ins., 23 : 27.*

Female : Antennae in female clavate, with 11 segments, third or fourth segment with a process; epistomal margin in front with 5 projections; fore wing without veins *m, st* and *pm;* head depressed, 1.50 times as long as wide.

Male : Head strongly depressed; antennae with 3 or 4 segments, including one annellus; antennal base not enclosed in a canal; mandible in male small, unidentate; thorax campanulate in outline; fore tarsus with 5 segments, not received in a groove in the tibiae; wings absent; eyes generally small, ocelli 3.

For a detailed description see Grandi 1916.

Type-species : *Eupristina masoni* Saunders

Key to Species

1.	Females	2
	Males ..	5
2.	Head longer than wide at eye or at the most as long as wide	3
	Head distinctly wider than long	4
3.	Mandibular apical teeth well developed, projecting; appendage with 8 dentiform projections on the inner margin; middle tarsus a little longer than tibia; hind tarsus 2 times tibia	*E. grassii* Grandi
	Middle tarsus a little shorter than tibia	*E. belgaumensis* Joseph
4.	Mandibular appendage elongate; with the raised laminae fused to the dentate projections on inner margin in 10 transverse processes; fore coxa with laminate expansion on the ventral margin; middle tarsi equal to tibia; hind tarsi a little over 2 times tibia	*E. koningsbergeri* Grandi
	Mandibular appendage broad, with 8 raised lamellae, slightly projecting, of which the first 3 fused with dentate projections on inner margin; middle tarsi a little over 2 times tibia	*E. saundersi* Grandi
5.	Head distinctly longer than wide	6
	Head not longer than wide	7
6.	Middle femora a little longer than wide	*E. grassii* Grandi
7.	Head a little wider than long	*E. belgaumensis* Joseph
	Head about as wide as long	8

8. Propodeum as long as wide; middle femora as long as wide, distinctly projecting	*E. emeryi* Grandi
Propodeum distinctly wider than long; middle femora a little longer than wide, convex above, not projecting	9
9. Propodeum trilobate in the posterior extremity; pronotum anteriorly narrowed	*E. saundersi* Grandi
Propodeum curved behind; pronotum anteriorly not narrowed	*E. koningsbergeri* Grandi

Eupristina grassii Grandi

1916 *Eupristina grassii,* Grandi, *Boll. Lab. Zool. portici,* 11 : 218-225.
1935 *Eupristina grassii,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 230.
1938 *Eupristina grassii,* Mani, *Cat. Indian Ins.,* 23 : 27.
1953 *Eupristina grassii,* Joseph, *Agra Univ. J. Res.* (Sci) 2 : 282.

Female Head length 0.47 mm, width 0.47 mm; thorax length 0.56 mm, width 0.49 mm; pronotum length 0.49 mm; mesonotum width 0.44 mm; metanotum 0.39 mm; propodeum length 0.07 mm; width 0.47 mm; abdomen length 0.77 mm; ovipositor 1.52 mm; fore wing length 1.31 mm; width 0.56 mm; hind wing length : width 80 : 25.

Head posterior part, antennal segments 4-11, pronotum, mesonotum, metanotum-propodeum, urotergites 3-8 and ovipositor-valve dark castaneous-brown; anterior part of head yellow-ferruginous; first 3 antennal segments, legs, sternopleurae, urosternite ochraceous-white; hind femora, hind tibiae basally concolourous with pronotum; wings hyaline; eyes orange.

Head about as long as wide at compound eyes; epistomal margin with conspicuous rounded sublateral lobes, with obscure rounded submedian angular process; lateral margin in front of eyes subequal to or a little longer than the greater diameter of eyes; almost straight or moderately converging; posterior margin rounded, subconcave medially; eyes small, slightly projecting; ocellar triangle obtuse; scape not quite 2 times longer than wide; second segment with scattered macrochaetae externally and slender spinous setae internally; third segment extremely reduced; fourth segment 1.50 times longer than thick apically, with large elongate sensoria and one digitiform seta; sixth segment subequal to the preceding and with similar sensoria and setae; seventh segment much larger than the preceding 4 segments; segments 8-10 subequal, gradually becoming thicker apically, distinctly longer than 7; segment 11 about 1.50 times as long as thick, sensoria and setae as in segment 10; mandible distinctly longer than wide basally, dorsal margin slightly convex, apical tooth acute, setae and spines along dorsal margin, with 9-10 lines ventrally inside; appendage a little longer than body of mandible, somewhat narrow basally, with 9 transverse laminae forming 8 dentiform projections, not fused with the mandible as in *Ceratosolen* or *Blastophaga;* maxillary palp reduced apically; labial palpi with 2 setae

apically; pronotum subtrapeziod-rounded, with short setae, parapsidal furrows weak but complete; scapula a little longer than broad; scutellum somewhat wider than long; axillae subtriangular; fore wings a little more than 2 times longer than broad; pubesence fine, only in 0.80 of its length, veins abruptly swollen; hind wing 3 times longer than broad and about 0.60 of the fore wing; fore coxa 2 times longer than wide. Trochanter little distinct; femora 2 times longer than thick; tibia subequal to femur, with 4 toothed crest; tarsi a little longer than tibia; metatarsus a little longer than the following 2 segments combined; fifth subequal to first; middle coxa a little less than 2 times wider than long; trochanter equal to coxa, with one secondary segment; femur 3 times longer than thick, abruptly reduced at base and apically; tibia a little longer than femur with simple spur; tarsus a little longer than tibia; metatarsus equal to the following 2 segments combined; fifth segment not longer than second. Hind coxa 2 times as long as thick; femora 2 times as long as thick; tibia a little shorter than femora, with 2 teeth distally outside; tarsus about 2 times tibia; segments oblique; metatarsus equal to the following 3 segments combined; fifth segment a little longer than the third; propodeum 5 times as wide as long; ovipositor 2 times abdomen.

Male : Length head 0.33 mm; width 0.39 mm; pronotum length 0.45 mm; mesonotum length width ratio 280 : 525.

Body yellowish-white and partly yellowish-brown; antennae and abdomen slightly darker; eyes black; head a little larger than long; strongly dilated behind eyes; scape 2 times as long as wide, inner margin convex; pedicel as long as wide, about 0.50 of scape; third segment an annellus, 3 times as wide as long; fourth segment equal to scape; mandible with short setae; pronotum as long as wide basally; sides converging; anterior angle rounded; posterior angle projecting, rounded; mesonotum transverse, a little more than 2 times wider than long, metanotum not distinct; propodeum slightly wider than long; fore femora 3 times longer than wide; tibia 0.33 of femora, with a tridentate crest ventrally; metatarsus with some short, conical, stout teeth; middle coxa as wide as long; femora as long as wide with the ventral margin straight and dorsal margin broadly rounded; tarsus equal to tibia; metatarsus equal to the following 2 segments combined; hind coxa as long as wide; tibia a little shorter than femora, with a tridentate crest apically; tarsus equal to tibia or slightly longer; metatarsus exceeds the following 2 segments combined.

Type locality : *Ceylon : Peradeniya

Distribution : Ceylon, India : Travancore

Host : From figs of *Ficus bengalensis* Linn.

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* Now known as Sri Lanka.

Eupristina belgaumensis Joseph

(Fig. 11)

1954 *Eupristina belgaumensis,* Joseph, *Agra Univ. J. Res.* (Sci.) 3(2) : 409.

Female Length 1.70 mm. Body generally dark brown; legs and ovipositor pale yellowish-brown; first 3 segments of antennae yellow, with some reddish-brown, rest of antenna dark brown; wings hyaline.

Head longer than wide; epistome rounded; lateral lobe with a long seta and small median acute process bearing paired setae; lateral margin of head in front of eye subequal to eye and somewhat narrowed forwards; margin behind eyes slightly concave in the middle; eyes small; scape less than 2 times as long as thick; pedicel about 1.50 times as long as thick; first funicular segment about 1.50 times as long as thick, incompletely subdivided into two parts; segments 2-9 slender basally and thicker apically; second segment a little longer than thick; third longer than thick and thicker than second; third and fourth segments with sensoria hardly projecting above the surface and with 1-2 digitiform sensory rods; fifth segment distinctly thicker than the preceding segments; about 1.33 as long as thick, with 2 transverse rows of sensoria of which the apical row projects beyond the tip of the segment; sixth segment a little thicker apically than basally; seventh segment thicker than the preceding, as long as thick; eighth segment longer than the sixth; ninth segment slightly shorther than the fifth and 1.50 times as long as thick with long sensoria rods. Mandibles slightly wider than long, bidentate, with 6 elevated ridges ventrally, appendage about 2 times as long as wide and about 1.50 times the mandible, ventrally with 8 transverse ridges, of which the basal 2 are small, with 4 flat dentate processes on the inner margin; maxilla long, depressed, narrow, divided distally into inner and outer parts; labium between maxillae elongate slender, with distal bipartite claviform structure bearing an enlarged subglobose, single, stout tooth at tip and ventral lamina structure fringed with minute setae.

Pronotum large, rounded in front, sides converging forwards, hind margin concave; scutum 1.33 times as wide as long, with 9 setigerous fossae along the posterolateral margin; scapula slightly longer than wide, with 11 setigerous pits; parapsidal furrows complete; scutellum wider than long, with 5 setigerous pits posterolaterally and 6 pits behind in the middle. Fore wings about 2 times as long as wide; vein *sm* reaching to about basal 0.40, slightly recurved and abruptly thickened; hind wing about 3 times as long as wide; fore coxae about 3 times as long as wide, below with lamellate expansions fringed with long setae; fore femora 2.75 times as long as wide; tibiae less than 0.50 of femora, 2 times as long as thick, with a 5-dentate expansion outside; tarsi about 1.66 times tibiae; metatarsus longer than the 2 following segments combined; middle femora 4.50 times as long as thick, with semi-transparent area

basally; tibiàe longer; tarsi a little shorter, with the metatarsus slightly less than the following 2 segments combined; hind coxae 2 times as long as wide; hind femora about 2 times as long as thick, with lamellar expansion beneath; tibiae 0.60 of femora, 2 times as long as thick, with a large tripartite expansion apically outside, 3 odontoid

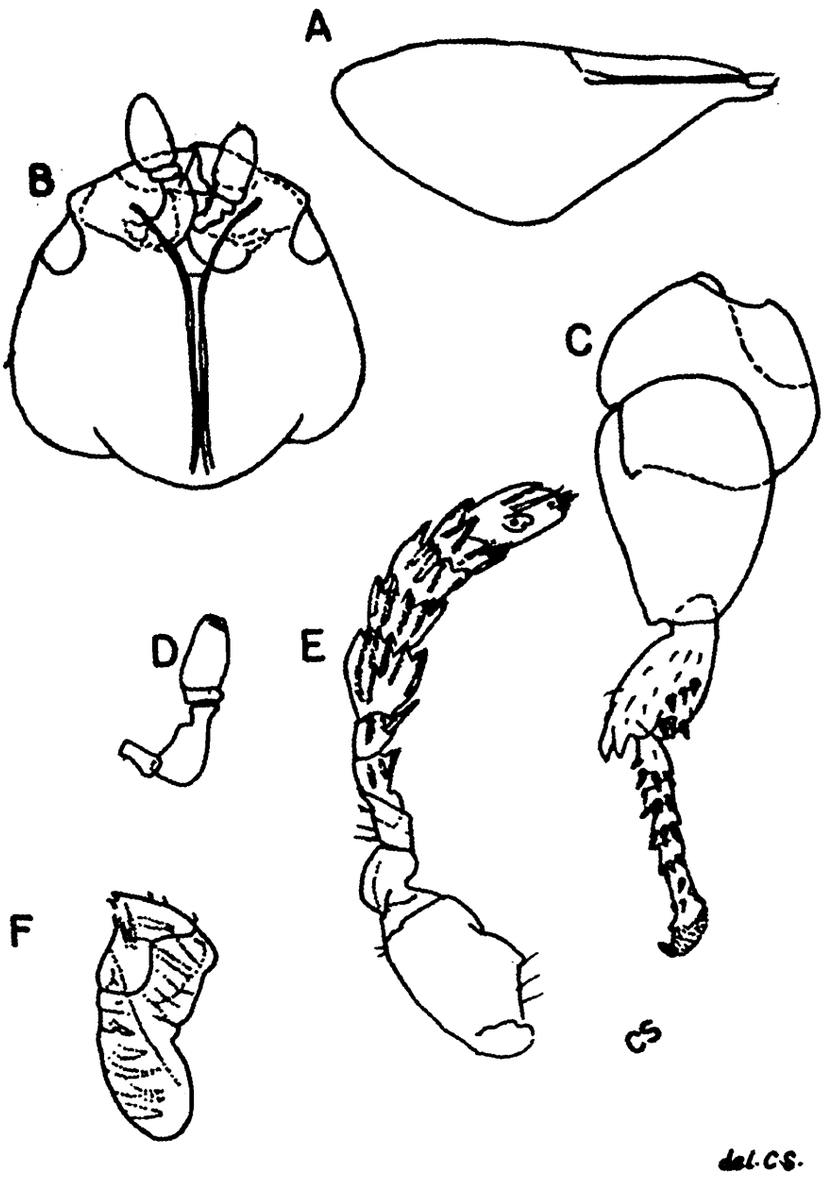

FIG. 11. *Eupristina belgaumensis* Joseph: A. Fore Wing, female; B. Head, male; C. Hind leg, male; D. Antenna, male; E. Antenna, female; F. Mandible, female. (*Modified from* Joseph)

processes on the inside and lamellate expansion along the dorsal surface; tarsi about 2.50 times tibiae, metatarsus a little longer than the following 2 segments combined.

Abdomen longer than wide; tergite 8 with paired spiracles; tergite 9 narrow, with paired short, subcylindrical cercoids bearing 4 long setae; ovipositor about 0.33 of abdomen.

Male 2.30 mm. Body generally ferruginous-brown; mandibles reddish-brown; antennae and abdomen brownish-yellow.

Head a little wider than long, strongly dilated behind and narrowed in front, hind margin trilobate; epistome with 2 minute projecting rounded submedian lobes, separated by shallow notch; frons in front with a distinct funnel-shaped notch, reaching to the hind margin. Antennae with 4 segments; scape stout, compressed, less than 2 times as long as wide; pedicel wider apically than basally; third segment minute, annelliform; fourth segment reduced apically, longer than scape, a little shorther than wide, apically differentiated into subhemispherical piece bearing stout ovoid sensory rods; mandibles 1.50 times as long as wide, unidentate, with a minute dentiform angular projection beneath.

Pronotum as long as wide, wider behind than in front; concave laterally, with a distinct lobe in the front and with deep clefts on either side, concave behind; fore coxae about 2 times as long as wide; femora slightly less than 3 times as long as wide, tibia shorter, slightly more than 1.33 times as long as wide, with 4 stout and 2 small dentiform processes dorsally and with elongate setae and 2 dentiform processes ventrally; tarsi shorter; metatarsus slightly shorter than the following tarsal segment and with 2 odontoid processes ventrally; middle coxae about 0.80 times as long as wide, femora about 1.33 times as long as wide; tibiae shorter, subcompressed, slightly less than 2 times as long as wide, metatarsus shorter than the following 2 segments combined; hind coxae wider than long, compressed, femora about 1.50 times as long as wide; tibia a little over 0.50 of femora, with a tridentate process outside, odontoid spines and setae; tarsi 1.33 times tibiae with odontoid spines, metatarsus shorter than the following 2 segments combined.

Type locality Belgaum

Host From figs of *Ficus mysorensis* Hayne

Eupristina koningsbergeri Grandi

1917 *Eupristina koningsbergeri*, Grandi, *Boll. Lab. Zool. Portici*, 11 : 217-218,
1917 *Eupristina koningsbergeri*, Grandi, *Boll. Lab. Zool. Portici*, 12 : 52,
1954 *Eupristina koningsbergeri*, Joseph, *Agra Univ. J. Res.* (Sci.) 3(2) : 415.

Female Length head 0.28 mm, width head at compound eye 0.35 mm; thorax length width 437 : 385; mesonotum width 0.37 mm; propodeum length : width 52 : 330; abdomen length 0.61 mm;

ovipositor 0.79 mm. Posterior part of head, thoracic dorsum, propodeum, urotergites, abdomen in front ventrally; femora above, tibia and ovipositor valve black-castaneous, otherwise yellowish-ochraceous; antennal segments 4-11 fuliginous.

Head distinctly wider than long at compound eyes; epistomal margin with 2 sublateral lobes, 2 submedian less projecting and one relatively large median dorsal; lateral margin of head in front of eye a little more than maximum eye diameter, weakly convex; posterior margin almost straight, rounded at the sides, ocellar triangle obtuse; scape about 2 times longer than wide; third segment distinctly divided into 2 spurious parts, with boracteate scale; fourth segment a little longer than large; fifth segment longer than thick, with elongate coeloconic sensillae; segments 6-10 subequal, larger than fifth; segment 11 a little longer than thick, reduced apically; mandible a little longer than wide, apical tooth acute, ventrally with 7 carinae more or less complete; appendix little longer than body of mandible with 8 transverse laminae, dentiform projections on inner margin; pronotum subtrapezoid; mesonotum nearly as wide as long; axilla subtriangular; fore coxa 2 times longer than wide, ventral margin with laminar expansion and a row of setae; femora about 2 times longer than thick; tibia with distal tridentate crest; tarsus somewhat longer than tibia; metatarsus a little longer than the following 2 segments combined; fifth segment equal to 2-3 combined, second fused with the third; middle coxa about 2 times wider than long; femora reduced basally and apically, 3 times longer than thick; tibia and tarsus subequal; metatarsus subequal to the following 2 segments combined; fifth equal to the second; hind coxa and femora 2 times longer than wide; tibia with 2 denticles apically; metatarsus subequal to second segment; propodeum strongly transverse. Ovipositor 1.50 times abdomen.

Male : Head length : width 297 : 297; pronotum length 0.42 mm; width in front 0.40 and behind 0.46 mm; mesonotum length 0.22, width 0.44 mm; propodeum length : width 16 : 28; fore tibia with dorsal tridentate crest and short teeth and setae, metatarsus with 2 large conical teeth; middle coxa a little wider than long; femora 1.50 times longer than wide; tibia subequal; with teeth along dorsal margin; metatarsus equal to following 2 segments combined; first 4 tarsal segments with circlet of apical teeth; hind femora as long as wide, dorsally strongly arched; tarsus somewhat longer than tibia metatarsus not quite equal to the following segments combined, segments 4-5 partly fused; first 4 segments with teeth.

Type locality : Java

Distribution : Java; India (Dehra Dun)

Host : Figs of *Ficus benjamina comosa* King

Eupristina saundersi Grandi

1916 *Eupristina saundersi,* Grandi, *Boll. Lab. Zool. Portici,* 11 : 225,
1935 *Eupristina saundersi,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 231,
1938 *Eupristina saundersi,* Mani, *Cat. Indian Ins.,* 23 : 27.

Female : Length head 0.39 mm; width 0.44 mm.

Head a little wider than long; epistomal margin with indistinct sublateral rounded lobes, the median lobe a little more projecting and obtuse; lateral margin of head, in front of eye longer than eye, slightly convex and converging; margin behind eyes hardly developed in the form of a curve; surface with scattered setae; eyes distinctly projecting; ocellar triangle obtuse; mandible longer than wide at base, with apical tooth well developed acute and straight; on the ventral surface with 7-8 elevations; appendage a little longer than mandible, with 7 transverse laminae, of which the first 2 are fussed together to form a short projecting tooth; the others are projecting and free; fore coxa 2 times longer than wide; tarsus about 1.50 times tibia; metatarsus a little longer than the following 2 segments combined; fifth equal to the first; middle coxa as long as wide; femora 4 times longer than wide; tibia reduced basally, a little longer than femora; trochanter well developed, 1.50 times as long as wide; apical spur short, simple; tarsus a little shorter than tibia; metatarsus a little longer than the following 2 segments combined; fifth segment equal to first; middle coxa as long as wide; trochanter well developed, 1.50 times as long as wide; femora 4 times longer than wide; tibia reduced basally, a little longer than femora; apical spur short, simple; tarsus a little shorter than tibia; metatarsus a little longer than the following 2 segments combined; fifth segment equal to first; hind coxa 2 times as long as wide; tarsus 2 times tibia, with its segments compressed but slender; metatarsus equal to 3 following segments combined; fifth segment equal to third.

Male : Head length 0.29 mm, width 0.32 mm; pronotum 0.56 mm; antennae 0.46 mm; mesonotum length 0.49 mm; width 0.47 mm.

Head a little wider than long; scape a little less than 2 times the width; pedicel a little longer than wide and about 0.5 of scape; third segment annelliform; fourth segment a little longer and wider than scape; mandible subtriangular, a little longer than wide; pronotum as wide as long; mesonotum completely fussed with propodeum, with the lateral margin strongly converging; propodeum distinctly wider than long; posteriorly 3-lobed; the middle lobe largest; fore femora 2.5 times longer than wide; tibia about 0.33 of femora; middle leg as in *E. koningsbergeri;* coxa as long as wide; femur a little longer than wide; tibia with numerous, stout teeth from the basal 0.5 to tip; metatarsus dentate apically, equal to fifth and also following 2 segments combined; hind tarsus equal to tibia;

metatarsus equal to second and fifth; the first 3 tarsal segments armed with a carina or teeth apically; fourth unarmed and partially fussed with fifth.

Type locality : Calcutta

Host : From figs of *Ficus religiosa* Linn

Species Insertae Sedis

Eupristina masoni Saunders

1883 *Eupristina masoni,* Saunders, *Trans, ent. Soc. London,* 5,pl.
1883 *Eupristina masoni,* Saunders, *Ent. month. Mag.,* 9 : 163.
1928 *Eupristina masoni,* Grandi, *Bull. Soc. Zool. France* 53 : 81.
1935 *Eupristina masoni,* Grandi, *Boll. Lab. Bologna,* 7 : 230.

Female : Length 1.75 mm. "Capite (basi excepto) pedibusque pallide flavis; antennis articulis lor basilibus (non-nullis stoque) flavis, reliquis caerules centibus; capitis basi thoracique viridibus; alis hyalinis, glabris, costa basi pilosa, vena posteostalis lutea; abdomine nitido, piceo, basi plus minusve testaceo"

Male : Length 1.50 mm. "testaceus, antennis pallideflavis, pronoti disco vilta ovale circumsigmato, abdomine albido"

Type locality : Calcutta

Host : From figs of *Ficus bengalensis* Linn.

Blastophaga Gravenhorst

1826 *Blastophagus,* Gravenhorst, *Arb. schles. Ges. vaterl. Kultur,* 1 : 23.
1829 *Blastophaga,* Gravenhorst, *Schles. Gesell. Vaterland. Kultur, Beitr. Ent.,* 27.
1883 *Kradibia,* Saunders, *Trans. Ent. Soc. London,* 20, 23.
1904 *Blastophaga,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 233, 234, 394.
1909 *Blastophaga,* Schmiedeknecht, *Gen. Ins.,* 97 : 9.
1915 *Blastophaga,* Grandi, *Boll. Lab. Zool. Portici,* 10 : 122-129.
1915 *Paraceratosolen,* Girault, *Mem. Queensland Mus.,* 4 : 312.
1915 *Kradibiella,* Girault, *Mem. Queensland Mus.,* 4 : 313.
1935 *Blastophaga,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 214.
1938 *Blastophaga,* Mani, *Cat. Indian Ins.,* 23 : 28.
1960 *Blastophaga,* China, *Bull. Zool. Nomencl.,* 18 : 69.
1967 *Blastophaga,* Hill, Figs of Hong Kong, *Hongkong Univ. Press.* p. 91.
1979 *Blastophaga,* Krombein *et al., Hymen. N. America,* 1 : 748.

Female : Head about as long as wide; antennae with 11 or 12 segments; first funicular segment with an appendage; fore wing with veins *m, pm* and *st* distinct, seventh abdominal tergite on both sides with circular or shortly oval grooves.

Male : Antennae with 13 segments, the basal part free, not enclosed in a canal; fore tarsi with 3 segments; hind tarsi very long, more than 2 times as long as tibia.

Type-species : *Blastophaga psenes* (Linn.)

KEY TO SPECIES

1.	Hind metatarsus equal to the following 3 segments combined.	4
	Hind metatarsus less than the following 3 segments combined.	2
2.	Hind metatarsus equal to 2.5 of following segments combined	*B. psenes* (Linn.)
	Hind matatarsus equal to 2 or less than 2 following segments combined.	3
3.	Mandibular appendage with 10 ridges.	*B. constabularis* Joseph
	Mandibular appendage with 5 ridges.	*B. vaidi* Joseph
4.	Mandibular appendage with 7 ridges.	*B. arnottiana* Joseph
	Mandibular appendage with 4 ridges.	*B. qestroi* Grandi

Blastophaga arnottiana Joseph

(Fig. 12)

1953 *Blastophaga arnottiana,* Joseph, *Agra Univ. J. Res.* (Sci.) 2 : 270.

Female Length 1.20 mm. Body brownish-yellow, with dark brown in part; legs and base of antennae honey-brown; rest of antennae yellowish-brown; eyes pinkish-red; ovipositor brown.

Head a little longer than wide; margin in front of eyes convex and longer than eye; epistome with a minute median angular and 2 submedian projections; margin behind eyes rounded, slightly concave in the middle; ocelli almost in a straight line. Scape a little more than 1.50 times as long as thick; pedicel 2 times as long as thick; third segment with a laminate process apically; fourth segment longer than thick; fifth segment more than 1.50 times as long as thick; sixth segment a little longer and stouter than the fifth; seventh segment subequal to the sixth; ninth and tenth segments like the eighth; terminal segment subfusiform, about 2 times as long as thick. Mandibles large, stout, bidentate, with a large acute apical tooth and a short obtuse subapical tooth, with appendage about 2 times longer than wide and about 1.50 times the mandible and having 7 transverse ridges.

Pronotum subtrapezoid; scutum with long setae laterally behind, wider than long; scapulae with 5 setae; scutellum wider than long, with 4 setae about the middle. Fore wings a little less than 2 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 400 : 100 : 50 : 100; hind wings about 4.33 times as long as wide. Fore coxa about 2.33 times as long as thick; fore femora a little less than 2 times as long as wide; tibia less than 0.50 of femora, with a tridentate process outside and single apical spur; tarsi about 1 75 times tibiae, metatarsus subequal to the following 2 segments combined; middle coxae 1.25 times as long as thick; femora 3.75 times as long as thick; tibia longer, 8 times as long as thick; tarsi slightly shorter than tibia, metatarsus slightly longer than the following 2 segments combined; hind coxae a little more than 1.50 times as long as thick; femora

over 1.50 times as long as thick with a distinct dentate process; tibiae about 0.66 of femora and a little less than 2.50 times as long as thick, with tridentate process outside near tip and with a sublaminate and bifid apical spur; tarsi 2 times tibiae; metatarsus subequal to the following 3 segments combined; abdomen 1.75 times as long as wide; tergite 8 with paired spiracles; ninth tergite with cercoids bearing 4 setae; ovipositor about 1.50 times abdomen.

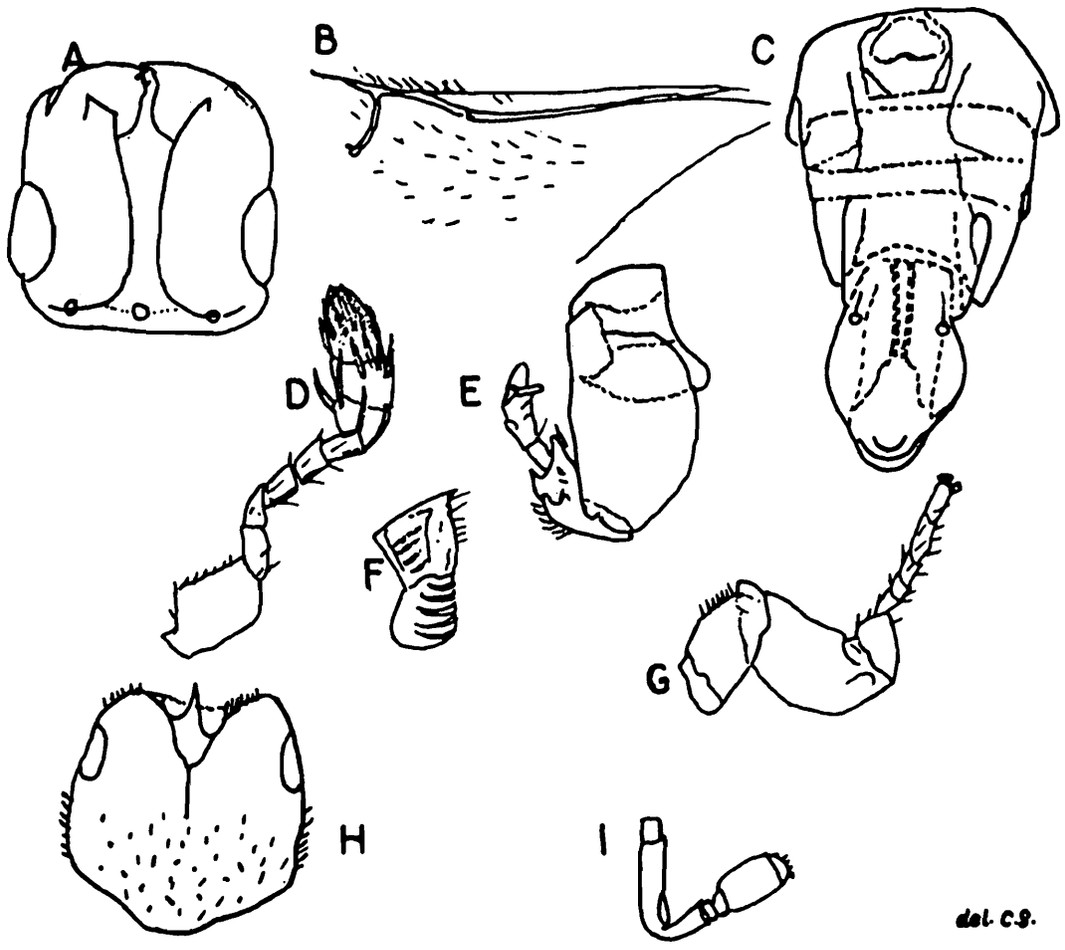

FIG. 12. *Blastophaga arnottiana* Joseph : A. Head, female; B. Fore wing venation, female; C. Thorax, female; D. Antenna, female; E. Fore leg, male; F. Mandible, female; G. Fore leg, female; H. Head, male; I. Antenna, male. (*Modified from* Joseph).

Male : Length 1.20 mm. Body honey-brown; tergites smoky-brown.

Head a little wider than long, rounded angles in front and behind; sides slightly convex; frons with deep concavity and median cleft; epistome slightly concave. Antenna with 5 segments, in addition to radicle; scape 2 times as long as thick; pedical about 2 times as long as thick, slightly more than 0.50 of scape; third antennal segment thicker than long; fourth segment 2 times as long as thick; fifth a little shorter than scape, with a whorl of sensoria apically. Mandible 1.33 as long as wide, bidentate.

Pronotum wider than long, with rounded angles in front, wider behind than in front; mesonotum transverse, about 2.25 times as wide as long; fore coxae as long as thick; femora large, a little more than 1.50 times as long as thick; tibiae a little more than 2 times as long as thick and about 0.50 of femora; tarsi with 2 segments, metatarsus a little longer than the second segment; middle coxae 1.50 times as long as thick; femora subcompressed, a little less than 3 times as long as thick; tibia subclavate, 5 times as long as thick; tarsi with 5 segments, metatarsus a little longer than the following 3 segments combined; hind coxae 1.50 times as long as thick; femora large, compressed, a little less than 1.50 times as long as wide; tibiae subcompressed, shorter than femora, 3 times as long as wide, with a tridentate process apically outside and a lamniate spine; tarsi with 5 segments, longer than femora, metatarsus long.

Abdomen about 2.33 as long as wide; tergite 8 with spiracles.

Type locality Trivandrum

Host From figs of *Ficus arnottiana* Miq

Blastophaga constabularis Joseph

(Fig. 13)

1953 *Blastophaga constabularis,* Joseph, *Agra Univ. J. Res.* (Sci.) 2(2) : 267.

Female Length 1.08 mm. Body generally ferruginous-brown; legs pale brown, except the pale yellow tarsi; eyes pinkish-red; antennae dirty brown; ovipositor honey-brown; wings hyaline.

Head wider than long; epistome with paired lateral rounded lobes and median rounded projection bearing paired setae; lateral margin in front of eyes about 0.80 of the eye; margin behind eyes rounded. Antennae with 11 segments; scape about 1.75 times as long as wide, with a distinct angular projection a little beyond the basal 0.50 laterally; pedicel about 1.50 times as long as thick; third segment partially bipartite; fourth antennal segment small, only a little longer than thick; fifth segment about 1.50 times as long as thick; sixth segment subequal to the fifth; seventh segment slightly less than 2 times as long as thick; eighth segment 1.33 times as long as thick; ninth and tenth segments thicker than long; terminal segment more than 2 times as long as thick; segments 5-7 with whorls of elongate sensoria and setae. Mandibles as wide as long, bidentate, with the apical tooth large, appendage distinctly longer, with 10 transverse laminar elevations.

Mesonotum with pair of long setae laterally and behind; scapulae with some short setae laterally; axillae with 4 long setae; scutellum with 7 setae behind, a little wider than long. Fore wings slightly more than 2 times as long as wide; vein *sm* slightly over 4 times *m*, *st* subequal to *m* subclavate; *pm* hardly 0.50 of *st*; hind wing 5 times as long as wide. Fore coxae slightly more than 2 times

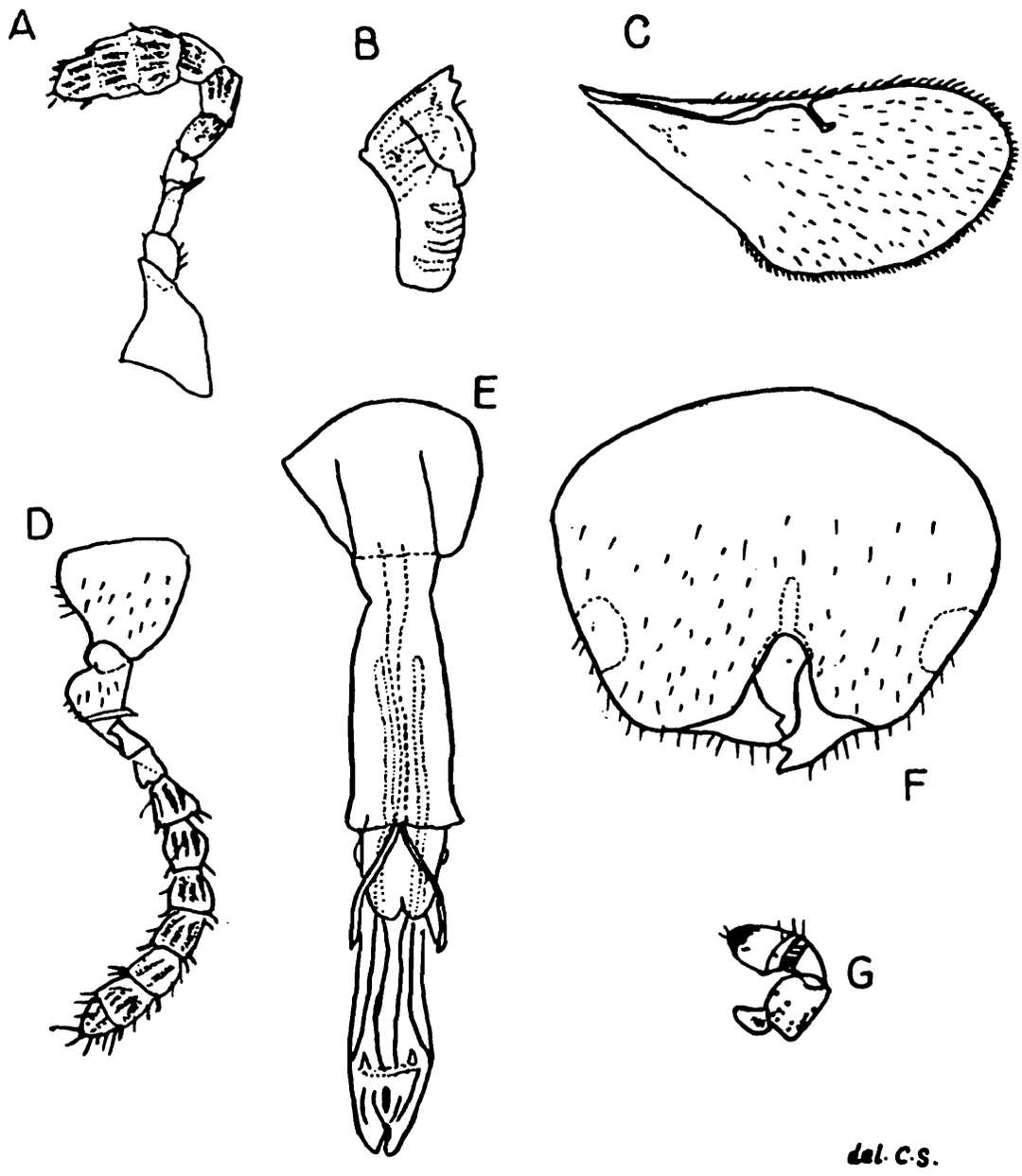

FIG. 13. A. *Blastophaga constabularis* Joseph, female, Antenna : B-G. *Blastophaga vaidi* Joseph; Female : B. Mandible; C. Fore wing; D. Antenna; E. Ninth urite intersegmental membranous collar and genital armature : Male : F. Head; G. Antenna. (*Modified from* Joseph).

as long as thick; femora 2.66 as long as thick; tibiae about 2.33 times as long as thick, dorsally with 3 dents, ventrally with single dentate process, spur single; metatarsus equal to the following 2 segments combined; middle coxae thicker than long; femora 5 times as long as thick; tibiae longer, 8 times as long as thick, subclavate, spur single; tarsi equal to tibiae, metatarsus slightly less than the following 2 segments combined; hind coxae 2 times as long as thick; femora 2 times as long as wide, outer margin rounded; tibiae shorter than femora, slightly less than 3 times as long as thick, with a complex

tridentate process apically on the outside; metatarsus about 1.33 times the following 2 segments combined.

Abdomen longer than wide; tergite 7 with paired spiracles; ovipositor 1.25 times abdomen.

Type locality Agra

Host From figs of *Ficus infectoria* Roxb.

Blastophaga gestroi Grandi

1916 *Blastophaga gestroi,* Grandi, *Boll. Lab. Zool. Portici,* 11 : 184.
1928 *Blastophaga gestroi,* Grandi, *Bull. Soc. Zool. France,* 53 : 79.
1953 *Blastophaga gestroi,* Joseph, *Agra Univ. J. Res.* (Sci.) 2 : 277.

Female Third antennal segment divided into 3 parts of which the proximal one is annellus; segments 10 and 11 fused together, mandible with one apical tooth, and an appendage a little longer than wide; with 4 long transverse laminate projections; maxillary palpus with 2 short acute projections, and one subapical, stout, seta; middle tarsus a little shorter than tibiae, middle metatarsus a little shorter than rest of segments; hind metatarsus equal to the 3 following segments combined. Ovipositor 0.50 of the abdomen. Segments 6-9 stout, transverse, second segment more or less projecting behind, third segment well developed, with one scale projecting above the fourth segment.

Male Mesonotum, metanotum and propodeum distinct, prosternum fused with episternum; fore tarsus with 2 segments, middle legs imperfect, the last segment vesiculate without pre-tarsus; antennae with 4 segments; propodeum not projecting over abdomen; third urotergite not modifed; head as long as wide; mandible bidentate apically.

Distribution India Travancore

Host From figs of *Ficus asperrima* Roxb.

Blastophaga vaidi Joseph

1954 *Blastophaga vaidi,* Joseph, *Agra Univ. J. Res.* (Sci.) 3(2) : 401.

Female Length 1.84 mm. Body generally dark smoky-brown; antennae and legs paler; eyes red.

Head distinctly wider than long; posterolateral angles obtuse; antennae with 11 segments; scape large, subcompressed, about 1.50 times as long as wide; pedicel about 1.50 times as long as thick, clothed with dense short, stiff setae; first funicular segment tripartite, with the basal part annular; second funicular segment shortest, subcylindrical, slightly longer than thick, the following 5 segments

thinner basally than apically; club triarticulate, about 2.66 times as long as thick.

Mandible stout, a little wider than long, bidentate, with the appendage about 2 times as long as wide, with 5 terminal transverse lamellar elevations; maxillae with 2 elongate, slender flattened segments, with a digitiform process on the second segment representing the palpus; thorax glabrous, scutellum a little wider than long; fore wing about 1.25 times as long as wide; veins *sm : m : pm : st* ratio 400 : 100 : 95 : 95; hind wing about 5 times as long as wide; fore coxae less than 5 times as long as wide; fore femora large, 2.33 times as long as wide; tibia a little more than 2 times as long as wide; middle femora about 3.50 times as long as wide; metatarsus slightly less than the following 2 segments combined; hind coxae about 1.50 times as long as wide, compressed, narrowed apically; femora compressed, about 2 times as long as wide; tibiae stout, narrowed apically, about 2.50 times as long as wide, with complex tridentate process outside and long, recurved odontoid process inside; metatarsus longer than the following 2 segments combined.

Abdomen longer than wide; tergite 8 with paired spiracles; tergite 9 with short, subcylindrical cercoids bearing long setae; ovipositor about 0.33 of abdomen.

Male : Length 1.84 mm. Body generally brownish-yellow; except fore tibiae and hind tibiae in part, legs brownish-yellow; antennae and tubular extension of abdomen honey-yellow; mandibles ferruginous-red; eyes black.

Head a little wider than long, rounded; antennae short, stout and with 4 segments; radicle about 0.60 of scape; scape stout, about 1.33 times as long as wide; pedicel about 1.33 times as long as thick and 0.66 of scape; third segment annular; terminal segment subovoid, tripartite, distally subhemispherical; mandibles small, stout, wider than long, bidentate; maxillae incompletely subdivided into 2 parts. Thorax with large subquadrate pronotum wider than long, feebly convex in front; fore coxae a little longer than wide with distinct carina reaching tip; femora distinctly compressed, about 1.50 times as long as wide; tibiae slightly longer than femora, subcylindrical basally enlarged and stout apically, the outer margin with an apical concavity dorsally with a bidentate border and ventrally tridentate border, with a bifid spine in between; metatarsus hardly less than 0.50 of tarsus, second tarsal segment longer than metatarsus; middle coxae compressed, a little over 2 times as long as wide; tibiae less than 6 times as long as thick; metatarsus slightly less than the following 2 segments combined; hind coxae about 1.50 times as long as wide; hind femora about 1.33 times as long as wide, dorsally rounded; tibiae about 0.80 of femora, with a complex tridentate process outside near tip composed of 3 stout teeth, of which the ventral one has a short secondary process; with large laminar

recurved claw-like spine inside near ventral margin; metatarsus subcylindrical, longer than the following 2 segments combined.

Abdomen 2 times as long as wide, with segments 7-9 modified into a tubular form.

Type-locality Dehra Dun
Host : From figs of *Ficus palmata*

Blastophaga psenes Linnaeus

1758 *Blastophaga psenes,* Linnaeus, *Syst. Nat.,* (10) 1 : 554.
1767 *Cynips psenes,* Linnaeus, *Syst. Natl.,* 12, 1(2) : 919.
1829 *Blastophaga grossorum,* Gavenhorst, *Ubers. Arbeit Schles. Ges. Vaterl. Cultur.,* 27.
1837 *Blastophaga sycamori,* Westwood, *Trans. ent. Soc. London,* 2 : 220.
1882 *Blastophaga psenes,* Westwood, *Trans. ent. Soc. London,* 30 : 55, pl. iv-v.
1882 *Blastophaga grossorum,* Mayr, *Mitt. Zool. stat. Neapel,* 3 : 551.
1885 *Blastophaga grossorum,* Mayr, *Verh. zool. -bot. Ges. Wien,* 35 : 177.
1920 *Blastophaga psenes,* Grandi, *Boll. Lab. Zool. Portici,* 14 : 63.
1929 *Blastophaga psenes,* Grandi, *Boll. Lab. ent. Bologna,* 2 : 1-147.
1938 *Blastophaga psenes,* Grandi, *Boll. Lab. Inst. Ent. R. Univ. Bologna,* 10 : 223-280.
1954 *Blastophaga psenes,* Joseph, *Agra Univ. J. Res.* (Sci.) 3 (2) : 408.
1956 *Blastophaga psenes,* Condit & Enderud, *Hilgardia,* 25 : 64-85, 616.
1958 *Blastophaga psenes,* Joseph, *Theses, Fac. Sci. Univ. Paris,* 201-230.
1979 *Blastophaga psenes,* Krombein *et al., Hymen. N. America,* 1 : 748.

Male : Head small, rounded, with 2 black lateral nearly rounded eyes; front margin truncate, with angular projection in the middle; mandible small, subquadrate, with 2 acute teeth; antennae short, with 3 segments; scape and pedicel obconic, subequal; pedicel emarginate basally inside; third segment ovate, with a number of bristles at tip; thorax oblong, convex; pronotum large; mesonotum short, transverse; metanotum longer, transverse with a deep impression laterally for receiving coxae; spiracle distinct behind the impression; wings wholly absent; fore legs very short, stout; femora greatly swollen; tibia short subtrigonate, apically with curved spines; fore tarsus short, first 2 tarsal segments minute, fused together; fifth segment clavate, claw dentate inside; middle legs long slender; hind femora and tibiae stout, tarsi 2 times tibiae; abdomen convex, wider than thorax, with 3 large basal tergites; the following segments gradually narrowed, curved underneath.

Female : Head nearly rounded; eyes large; mandibles with large serrated appendages; scape stout, subconical; pedicel reduced basally; third segment minute; fourth small, with a subulate lobe outside; rest of the 8 segments subequal; the 3 terminal segments club; fore wings large; fore legs stout, femora and tibiae short and stout; tibia stout, tarsal segments 5; middle femora only slightly thickened, tarsus

subequal to tibia; hind femora dilated basally, tibia very short, with tridentate calcar apically; abdomen compressed; ovipositor 0.33 of abdomen.

Type locality : Europe

Distribution : Europe, Iran, Afghanistan, Canaries Islands, California; India

Host : From figs of *Ficus carica* Linn., *F. serrata* Forsk. *F. pseudicarica* Miq., *F. persica*

Blastophaga breviventris Mayr

1885 *Blastophaga breviventris,* Mayr, *verh. zool. -bot. Ges. Wien,* 35 : 181.
1928 *Blastophaga breviventris,* Grandi, *Boll. Lab. Ent. Bologna,* 1 : 130-132.
1935 *Blastophaga breviventris,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 215.
1938 *Blastophaga breviventris,* Mani, *Cat. Indian Ins.,* 23 : 28.

Type locality : Ceylon : Peradenya

Distribution : Ceylon

Host : From figs of *Ficus asperrima* Roxb.

Blastophaga gomberti Grandi

1928 *Blastophaga gomberti,* Grandi, *Bull. Soc. Zool. France,* 53 : 70, pl. i, figs. 1-15.
1935 *Blastophaga gomberti,* Grandi, *Boll. Lab. ent. Bologna* 7 : 215.
1938 *Blastophaga gomberti,* Mani, *Cat. Indian Ins.,* 23 : 28.

Type locality : India

Host : From figs of *Ficus guttata* Blume

Blastophaga quadraticeps, Westwood

1882 *Blastophaga quadraticeps,* Westwood, *Trans. ent. Soc. London,* 43.
1885 *Blastophaga quadraticeps,* Mayr, *Verh. zool. -bot. Ges. Wien,* 35 : 176-177.
1923 *Blastophaga quadraticeps,* Grandi, *Bull. ent. Res.,* 13 : 296.
1928 *Blastophaga quadraticeps,* Grandi, *Boll. Lab. Ent. Bologna,* 1 : 123-126.
1935 *Blastophaga quadraticeps,* Grandi, *Boll. Lab. Ent Bologna,* 7 : 219.
1938 *Blastophaga quadraticeps,* Mani, *Cat. Indian Ins.,* 23 : 29.
1953 *Blastophaga quadraticeps,* Joseph, *Agra Univ. J. Res.* (Sci.) 2 : 277.

Type locality : Singapore

Distribution : Malaya, Malacca, Ceylon, India : Trivandrum

Host : From figs of *Ficus religiosa* Linn.

Ceratosolen Mayr

1885 *Ceratosolen,* Mayr, *Verh. zool. -bot. Ges Wien,* 35 : 164.
1904 *Ceratosolen,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 233, 234.
1909 *Ceratosolen,* Schmiedeknecht, *Gen. Ins.,* 97 : 9.
1916 *Ceratosolen* Grandi, *Boll. Lab. Zool. Portici,* 10 : 133-150.
1935 *Ceratosolen,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 225.
1938 *Ceratosolen,* Mani, *Cat. Indian Ins.,* 23 : 29.

This genus resembles *Blastophaga,* but the female is separated by the elongate lateral grooves on seventh abdominal tergite; fore tarsi with 2 segments; hind femora stout, compressed; antennal segments upto 6, in some species the basal segments are enclosed in a canal; head often elongate; eyes often minute or absent.

Type-species : Ceratosolen appendiculatus Mayr

KEY TO SPECIES

1	Propodeum behind truncate ..	*C. emarginatus* Mayr
	Propodeum not truncate behind	2
2.	Propodeum 4 times wider than long	*C. fusciceps* Mayr
	Propodeum 3 times wider than long	*C. gravelyi* Grandi

Ceratosolen emarginatus Mayr

1906 *Ceratosolen emarginatus,* Mayr, *Wien. ent. Z.,* 25 : 153.
1927 *Ceratosolen emarginatus,* Grandi, *Boll. Lab. Zool. Portici,* 20 : 169.
1928 *Ceratosolen emarginatus,* Grandi, *Boll. Lab. ent. Bologna,* 1 : 189.
1954 *Ceratosolen emarginatus,* Joseph, *Agra Univ. J. Res.* (Sci.) 3(2) : 409.

"*Weibchen :* Länge 2 mm. Schwarzbraun, der Fünhlerschaft, die unterseite des Bauches und die Beine rotgelb. Der Fühlerschaft mit einmal gerundet-winkelig gekrummtem unteren Rande, das zweite bis fünfte Fadenglied länger als dick; alle drei Keulenglied länger als dick; alle drei Keulenglieder mitsammen verwachsen, eine spindelförmige Keule bildend. Das erste Glied der Vordertarsen ist etwas mehr wie halb so lang als die.

Vordertibie : das erste Glied der Hintertarsen so lang als die Hintertibie. Die stachelscheide nur etwa ein Drittel so lang wie das abdomen.

Männchen Von *C. fusciceps* verschieden durch das an der Hinterhälfte schmälere Medialsegment, welches den Hinterrand nicht abgerundet, sondern gestutzt und schwach ausgerandet hat; die Hinterecken sind nicht abgerundet, sondern gestutzt und schwach ausgerandet hat; Hinterecken sind nicht abgerundet, sondern rechtwinkelig. Der Kopf ist rötlichgelb, an der Oberseite glatt und kahl"

Type locality : China
Distribution : China, Indo-China; India (Dehra Dun)
Host Unknown

Ceratosolen fusciceps Mayr

1885 *Ceratosolen fusciceps,* Mayr, *Verh. zool. -bot. Ges. Wien,* 35 : 167.
1909 *Ceratosolen fusciceps,* Schmiedeknecht, *Gen. Ins.,* 97 : 10.
1923 *Ceratosolen fusciceps,* Grandi, *Bull. Ent. Res.,* 13 : 299.
1928 *Ceratosolen fusciceps,* Grandi, *Bull. Soc. Zool. France,* 53 : 79.
1928 *Ceratosolen fusciceps,* Grandi, *Boll. Lab. Ent Bologna,* 1 : 171.
1935 *Ceratosolen fusciceps,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 227.
1938 *Ceratosolen fusciceps,* Mani, *Cat. Indian Ins.,* 23 : 29.
1953 *Ceratosolen fusciceps,* Joseph, *Indian J. Ent.,* 15 (2) : 137.

Female : Length of head 0.53 mm, width 0.56 mm; thorax plus propodeum length 0.77 mm; width of pronotum 0.58 mm; width of propodeum 0.49 mm; abdomen 0.86 mm; ovipositor 1.31 mm; fore wing length width ratio 1575 : 887; hind wing length width ratio 1015 : 227

Body brownish-black, less partly dark yellow; middle femora darker above; antenna umber yellow; ovipositor valve black.

Epistomal margin with sub-rotund, sub-lateral lobes; median lobe well projecting, with rounded angle; lateral margin of head in front of eye about 0.66 of eyes; scape 2 times longer than wide; fourth segment a little longer than wide; fifth a little longer than fourth; sixth distinctly longer than fifth; seventh a little shorter than sixth; eighth a little thicker than long, slightly shorter than seventh; segments 9-11 form club; segments 5-9 with transverse series of long sensillae; mandible with distinct teeth appendage with 5 raised lamellae; maxillary palpus with a bacilliform process and 3 setae, 2 subapical and one apical; fore wing with vein *sm* distinctly longer than *m;* veins *m* and *pm* subequal; fore coxa about 2 times longer than wide; femora a little less than 2 times; tibia a little less than 0.50 of femora, with 4 dentate expansions apically; tarsus about 2 times tibia; metatarsus equal to tibia; hind coxa about 1.50 times longer than wide; femora 2 times longer than wide; tarsus 2.50 times tibia; metatarsus equal to tibia and 3 following segments combined; propodeum 4 times wider than long; ovipositor about 1.50 times abdomen.

Male : Length of head 0.56 mm; width 0.39 mm; pronotum length 0.42 mm; mesonotum length 0.38 mm, width 0.52 mm. Body pale yellow and partly brown; eyes black.

Head about 1.50 times as long as wide; lateral margin convex posteriorly; scape about 2 times longer than wide; second segment about 0.50 of scape and 2 times longer than wide; third segment 1.50 times the second, fourth subequal to third; maxillary palpus with one or 2 setae; labial palpus reduced with one very short apical seta; metanotum, propodeum not completely distinct; fore femur with long setae; tibia about 0.50 of femur; middle coxa 1.50 times longer than wide; femur with the ventral margin almost straight and dorsal margin strongly rounded; tibia subequal to femur with some spines

dorsally; tarsus subequal to tibia; metatarsus equal to the following 2 segments combined; hind coxa short, as long as wide, with a laminate expansion dorsally; femur stout basally; tibia compressed, tridentate apically; tarsus a little shorter than tibia; metatarsus equal to the following 2 segments combined; fifth segment equal to the first; eighth urite with spiracle and reniform large peritreme; ninth urite as long as wide, cerci small, bilobed basally and with 4-5 teeth apicallly; penis reduced apically, with proximal apodeme long.

Type locality : Java

Distribution : Ceylon, India : Pusa, Bangalore, Agra, Trivandrum.

Host : From figs of *Ficus glomerata* Roxb. and *Ficus covelli* (?)

Ceratosolen gravelyi Grandi

1915 *Ceratosolen gravelyi,* Grandi, *Boll. Lab. Zool. portici,* 10 : 150, 152.
1916 *Ceratosolen gravelyi,* Grandi, *Boll. Lab. Zool. Portici,* 11 :201-207.
1935 *Ceratosolen gravelyi,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 227.
1938 *Ceratosolen gravelyi,* Mani, *Cat. Indian Ins.,* 23 : 29.
1954 *Ceratosolen gravelyi,* Joseph, *Agra Univ. J. Res.* (Sci.) 3 (2) : 409.

Female : Length of head 0.50 mm; width of head 0.49 mm; length of thorax 0.84 mm; pronotum width 0.52 mm; propodeum width 0.44 mm; abdomen length 0.84 mm; ovipositor 0.23 mm; for wing 1 77 mm; width 0.80 mm; hind wind length 0.98 mm; width 0.18 mm. Body uniformly castaneous-brown, partly below on thorax and the sides of abdomen, legs, antennae and mandible yellowish-ochre; antennal segments 2-11 darker than scape.

Head as long as wide; epistomal margin with sublateral lobes rounded and equal to the submedian lobes; median lobe minute or absent; lateral margin of head in front of eye a little shorter than the eye, slightly convex and a little converging; margin behind eye well developed, rounded; eyes very small; antennae with 11 distinct segments; scape a little more than 1.50 times longer than wide; segments 2 and 3 typical of the genus; segment 4 a little more than 1.50 times as long as wide; fifth segment a little longer than fourth; sixth slightly longer than fifth but equally thick; seventh a little longer and thicker; eighth equal to seventh; ninth a little shorter than eighth; tenth subequal to ninth; eleventh a little less than 2 preceding segments combined; the last 3 segments form club; segments 5-11 with transverse rows of elongate sensillae; mandible with elongate appendage with 5 transverse laminae, of which the first 2 are acutely projecting; maxillary palpus with a bacilliform process and with one seta apicaly; pronotum well developed; scapula almost 2 times as long as wide; scutellum a little longer than wide; axillae with 8-10 setae; fore wing about 2 times as long as wide; coastal margin weakly

concave; vein *m* a little shorter than *pm* and subequal to *st;* fore coxa about 3 times as long as wide; femora 3 times as long as wide; tibia with a distal expansion and 4 teeth; tarsus shorter than femur; metatarsus equal to the 3 following segments combined; fifth segment equal to the second; middle femora 3 times trochanter; tibia unarmed tarsus a little shorter than tibia; metatarsus equal to the following 2 segments combined; fifth segment equal to the second; middle femora 3 times torchanter; tibia unarmed tarsus a little shorter than tibia; metatarsus equal to the following 2 segments combined; fifth equal to second; hind femora 2 times as long as wide, reduced apically, ventral margin shortly acute; tibia slender, with 2 apical teeth; tarsus 2.50 times tibia; metatarsus a little longer than tibia and equal to 3 following segments combined; fifth segment distinctly longer than second; propodeum a little more than 3 times as wide as long. Abdomen sub-cylindrical; ovipositor equal to abdomen.

Male : Length of head 0.47-0.50 mm, width 0.42-0.44 mm; pronotum length 0.40 mm, width in front 0.35 mm, behind 0.46 mm; mesonotum length 0.28 mm, width 0.50 mm. Head, thorax and propodeum pale ferrugenous; the first 2 or 3 tergites concolorous with thorax; rest of abdomen dark reddish.

Head a little longer than wide; lateral margin strongly converging; posterior angle rounded; the tridentate median frontal expansion abrupt and short; the lateral teeth distinctly longer than the median; eyes absent; antennae with 5 segments; scape 1.50 times as long as wide; pedicel 0.50 of scape; third segment extremely reduced, hardly visible; fourth segment as wide as scape, sub-cylindrical about 1.50 times as long as wide; fifth the longest segment, a little longer than scape; pronotum as long as wide, with margin almost straight or slightly diverging behind; mesonotum a little wider than pronotum; fore femora 2 times longer than wide; tibia 0.50 of femora; second tarsal segment with some setae; middle coxa 2 times as long as wide; femora 2 times as long as wide; tibia equal to femora with one apical tooth; tarsus slightly longer; metatarsus a little longer than the 3 following segments combined; hind femur with dorsal margin rounded; tarsus a little longer than tibia; metatarsus a little more than the following 3 segments combined; fifth equal to metatarsus; tenth urotergite as in *Ceratosolen crassitarsus* Mayr, with 2 dorso-lateral elongate apical processes and 2 sub-triangular stout cerci.

Type locality Chhota Nagpur

Distribution Eastern India

Host : From figs of *Ficus cunia* Hann.

Ceratosolen marchali Mayr

1906 *Ceratosolen marchali,* Mayr, *Wien. ent. Z.,* 25 : 155.
1928 *Ceratosolen berlandi,* Grandi, *Bull. Soc. Ent. France,* 53 : 74-79.
1928 *Ceratosolen marchali,* Grandi, *Boll. Lab. Ent. Bologna,* 1 : 175, 176
1935 *Ceratosolen berlandi,* Grandi, *Boll. Lab. Ent. Bologna* 7 : 228.
1935 *Ceratosolen marchali,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 228.
1938 *Ceratosolen marchali,* Mani, *Cat. Indian Ins.,* 23 : 30.
1953 *Ceratosolen marchali,* Joseph, *Agra Univ. J. Res.* (Sci.) 2 : 282.

Female : Largely like *C. solmsi* especially hind metatarsus, but a little longer than hind tibia; fore wing with black or brownish-black hairs.

Male : Length 2.2-2.3 mm. Reddish yellow; abdomen more yellow; mandible brownish-red. Femur and tibia without dense short seticerus puncti.

Head rounded, elongate, rectangular; length to width 7 : 4; antennae in 2 backwardly converging grooves ending in the middle of head and separated from each other by a longitudinal carina, produced in front into the tridentate clypeus; behind the antennal groove no longitudinal furrow. Propodeum elongate trapezoid; mesonotum transversely oval; propodeum quadrate; hind margin of propodeum transverse; hind metatarsus 2 times as long as thick, a little longer than 0.50 of hind tibia.

Type locality : India

Distribution Travancore

Host : From figs of *Ficus hispida* Linn.

Ceratosolen mysorensis Joseph

(Fig. 14)

1953 *Ceratosolen mysorensis,* Joseph, *Agra Univ. J. Res.* (Sci.) 2 : 277.

Female Length 1.60 mm. Body ferrugino-testaceous; antennae yellowish-brown, legs and ovipositor melleous, ovipositor yellowish-brown and black.

Head markedly longer than wide; lateral margin forwards of eyes a little less than 1.50 times as long as eye, slightly converging forwards; margin behind the eyes rounded off laterally and concave in the middle; ocelli in an obtuse triangle; eyes large; antenna with 11 segments; scape large, as long as thick; second segment with a number of short, stout specialised, pointed setae directed backwards; third segment strongly recurved, with 3 setae, sensillae and a terminal spine; fourth segment a little longer than thick; fifth a little less than 1.33 times as long as thick; length of sixth a little over 2 times its thickness; seventh a little less than 2 times as long as thick; eighth

thin basally, thick distally, 1.20 times as long as thick; segments 9-11 fused to club about 1.50 times as long as thick; ninth distinctly thicker than long, its margins diverging towards apex; tenth thickest about 2 times as thick as long, with a large clear ovoid area bearing about 8 rounded sensillae; eleventh segment small; segments 5-11 with many large elongate sensoria; mandible large and stout, wider than long, bidentate, apical tooth acute, appendage 1.33 times as long as the mandible, about 1.50 times as long as its own width, with 5 transverse ridges; fore leg with coxa a little less than 2.50 times as long as thick; femur large, about 2.20 times as long as thick, its dorsal margin arched, with a few long setae; tibia 2 times as long as thick, strongly recurved, with setae and a 4 dentate distal expansion; tarsi 5 segmented, with numerous setae, metatarsus a trifle longer than 0.50 of tarsus; hind coxa about 1.50 times as long as thick; with a few setae; femur large, compressed, 1.66 times as long as thick, with dorsal and ventral margins and setae; tibia 2.50 times as long as thick,

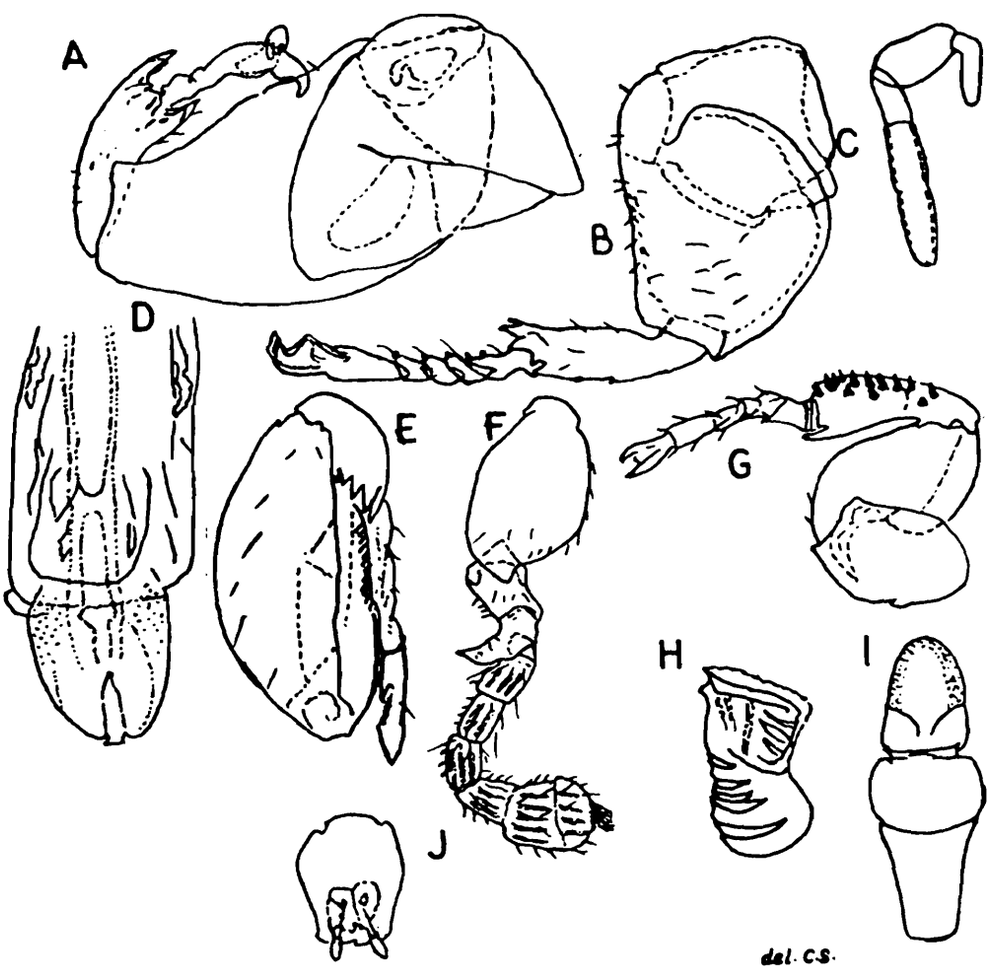

FIG. 14. *Ceratosolen mysorensis* Joseph : A. Fore leg, male; B. Hind leg, male; C. Antenna, male; D. Eighth and ninth abdominal tergites, male; E. Fore leg, female; F. Antenna, female; G. Middle leg, male; H. Mandible, female; I. Thorax, male; J. Head, male. *(Modified from* Joseph)

with dorsal and ventral margins and setae; tibia 2.50 times as long as thick, a little recurved, with a complex bidentate process apically on the outer face and a large compressed odontoid spine apically on the inner face; tarsi 5 segmented, with setae, long; metatarsus longer than second and third segments combined.

Seventh tergite with a pair of spiracles with large elongated peritremes; projecting part of terebra a little less than 1.50 times as long as the abdomen.

Male : Length 2.40 mm. Body generally rusty red-brown; legs pale brownish-yellow; abdomen and antennae melleous; eyes black.

Head about 1.33 times as long as wide; lateral margins of head moderately convex in the posterior 0.50, gradually converging forwards; posteromedian margin of head distinctly convex; epistomal margin with a median angulose projection and 2 submedian projecting lobes; dorsum of head with extremely minute setae; scape a little over 2 times as long as thick; second segment 2 times as long as thick; third longer and thicker than second, a little over 2 times as long as thick; fourth longer than third but less thick; mandible distinctly longer than wide, bidentate.

Pronotum a little less than 1.50 times as long as its maximum width; lateral margins very faintly concave and converging forwards; posterior margin concave; metanotum 1.33 times as wide as long, lateral margins convex; metanotopropodeum subtriangular, about 1.50 times as long as its maximum width; propodeum with a pair of spiracles with large peritremes which extend along its entire lateral margins; fore coxa large, a little less than 1.50 times as thick as long; femur very large, compressed, 2 times as long as thick; tibia 2 times as long as thick, distally with 3 large recurved odontoid processes on its outer face near the dorsal margin and 2 processes of the same type on its inner face near the ventral margin; tarsi 2 segmented, metatarsus shorter than the second tarsal segment and proximally with a distinct lobe; hind coxa about as long as thick; femur a little longer than thick; tibia about 4 times as long as thick, with 3 small odontoid spines along its outer margin; apically on the outer face tibia shows a complex bidentate process; tarsi as long as tibia, 5 segmented, with odontoid spines, metatarsus shorter than the fifth tarsal segment which is longest, second segment a little longer than the third and the fourth which are equal; pretarsus with a pair of robust falciform claws.

Abdomen large, about 2 times as long as its maximum width, eighth tergite with a pair of spiracles provided with large linear peritremes; tenth tergite with a pair of bilobed cerci of which the proximal lateral lobes bear no teeth, their distal lobes large and rounded off and with 5 or 6 dentiform processes.

Type locality Trivandrum.

Host : Figs of *Ficus mysorensis* Hayne

SUBFAMILY SYCOPHAGINAE

1883 *Cynipidae, Aploastomata,* Saunders, *Trans. Ent. Soc. London, 6 : 20.*

1904 *Sycophaginae,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 234.

1909 *Sycophagini,* Schmiedeknecht, *Gen. Ins.,* 97 : 10.

1938 *Sycophaginae,* Mani, *Cat. Indian Ins.,* 23 :

Females confined to Africa and Asia and differing from those of Agaontinae chiefly in the absence of mandibular appendages; head flat, with the frontal furrow wide and with a hook-like tubercle on the margin of the frontovertex; abdomen depressed, last segment not projecting behind; males easily separated from those of Agaontinae and from the apterous males of Torymidae by the very narrow head, sessile abdomen, elongate and gradually widened apically; abdominal tip with a tubercle on either side or a filamentaous appendage.

Wiebes (1967) recognizes the following tribes : 1. Sycorycitini, 2. Philotrypini and 3. Otitesselini, which are contained in the Idarninae under Torymidae.

KEY TO GENERA

1. Females	2
Males	6
2. Fore wing with vein *pm* longer than *st;* maxillary palpi with a row of teeth	3
3. Antennae with 13 segments, including 2 annelli; the second annellus larger than the first; vein *st* long; hind tibiae with a pectinate row of teeth apically	*Sycophaga* Westwood
Antennae with less than 13 segments	4
4. Antennae with 11-12 segments	5
Antennae with 9 segments; vein *st* short; hind tibiae normal	*Plastyscapa* Motschulsky
5. Antennae with 11 segments, including one annellus	*Neosycoecus* Joseph
6. Alate forms with 11 antennal segments; mostly however apterous, with 3 or 8 antennal segments	7
7. Head elongate, without deep groove	8
8. Scape about as thick as long; mandibles wide, tridentate; tarsal segments 2-4 thicker than long; abdomen with a long filamentous appendage on either side apically	9
Scape long, clavate, about 2 times as wide as long; mandibles conical, edentate; tarsal segments 2-4 not thicker than long; abdomen without filamentous appendages	*Apocrypta* Coq.
9. Spiracular process on tergite 8 widened a little before the middle	*Sycophaga* Westwood

Sycophaga Westwood

1758 *Cynips,* Linne (partim), *Syst. Nat.,* (10) 1 : 554.
1840 *Sycophaga,* Westwood, *Trans. ent. Soc. London,* 214, 222.
1855 *Apocrypta,* Coquerel (partim), *Rev. Mag. Zool. Guerin-Meneville,* (2) 7 : 367.
1898 *Apocrypta,* Dalla Torre, *Cat. Hym.,* 5 : 322.
1904 *Sycophaga,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 235.
1909 *Sycophaga,* Schmiedeknecht, *Gen. Ins.,* 97 : 12.
1916 *Sycophaga,* Grandi, *Boll. Lab. Zool. Portici,* 10 : 221-227.
1923 *Sycophaga,* Grandi *Boll. Lab. Zool. Portici,* 17 : 113.
1935 *Sycophaga,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 234.
1938 *Sycophaga,* Mani, *Cat. Indian Ins.,* 23 :

Female : Hind tibia with a pectinate row of teeth apically; antennae with 13 segments, including 2 annelli, of which the second is large; maxillary palpi without row of teeth below; fore wing with *st* rather long; *pm* much longer then *st.*

Male : Apterous; head elongate, without triangular groove in front; mandibles wide, tridentate; antennae with 13 segments; scape as long as thick; tarsal segments 2-4 thicker than long; abdomen ending behind laterally with 2 long filamentous appendages. Spiracular process on tergite 8 widened a little before the middle.

Type-species : Sycophaga sycamori (Linn.)

Sycophaga brevitarsus Grandi

(Fig. 15)

1915 *Sycophaga brevitarsus,* Grandi, *Boll. Lab. Zool. Portici,* 10 : 236.
1938 *Sycophaga brevitarsus,* Mani, *Cat. Indian Ins.,* 23 : 31.
1953 *Sycophaga brevitarsus,* Joseph, *Agra Univ. Res.* (Sci.) 2 : 62.
1956 *Eukoebelea brevitarsus,* Joseph, *Ann. Soc. Ent. France,* 125 : 103.

Female : Length 2.21 mm. Body generally yellowish-brown; tergites 4-8 with broad patches of brownish-black in front; legs honey-brown; antennal segments 3-13 smoky-brown; ovipositor yellowish-brown, with the valves black.

Head wider than long; epistomal margin with paired setae in the middle; anterior depression with the antennae inserted at the anterolateral angles; side of head in front of eye about 0.75 of eye; behind eye rounded; eyes large; ocellar triangles obtuse; sculpture leathery; antennae with 13 segments; scape a little less than 3 times as long as thick; second segment narrow basally, about 1.50 times as long as thick; third and fourth segments annelli; fifth segment as long as thick; sixth segment longer than the fifth; seventh and eighth subequal to the sixth; segments 9 and 10 subequal; segments 11-13 fused together to form club, a little over 2 times as long as thick; mandibles longer than wide, with 3 teeth; maxillary palpi

uniarticulate; labial palpi with 2 unequal segments. Pronotum wider than long; parapsidal furrows complete; becoming a shallow groove behind; fore wing over 2 times as long as wide; veins *sm : m : pm : st* ratio 60 : 15 : 14 : 10; hind wing about 3 times as long as wide; hind femora about 3.50 times as long as thick; tibiae distinctly longer, spurs unequal, longer spur about 2 times the shorter; tarsi with 5 segments, metatarsus longer than the rest of tarsus; propodeum about 2.50 times as wide as long; abdomen about 1.50 times as long as wide; tergite 8 with paired spiracles; ovipositor long, 6 times abdomen.

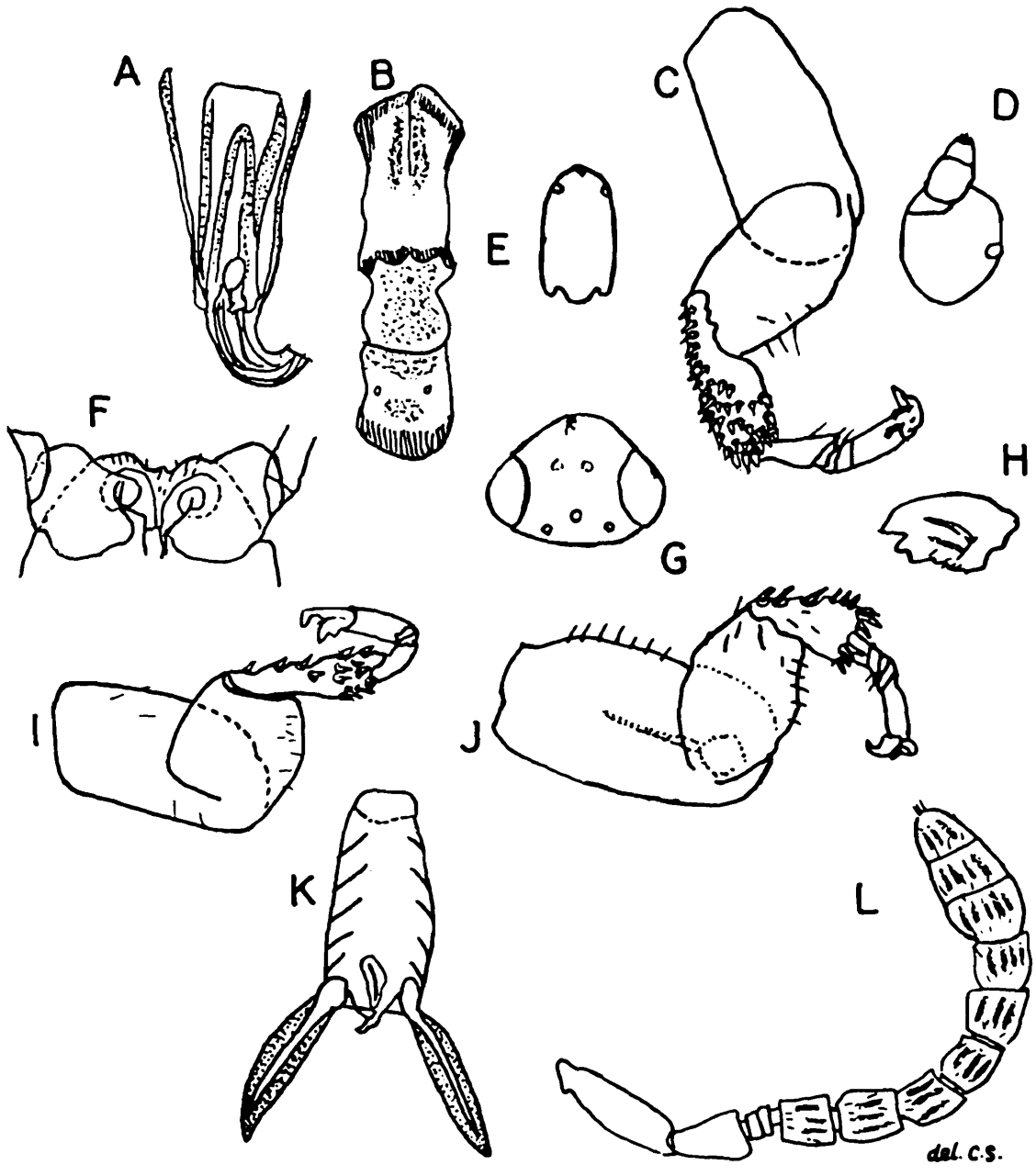

FIG. 15. *Sycophaga brevitarsus* Grandi : A. Tip of abdomen, male; B. Thorax, male; C. Abdomen, male; D. Antenna, male; E. Head, male; F. Details of epistomal margin, male; G. Head, male; H. Mandible, male; I. Fore leg, male; J. Hind leg, male; K. Abdomen, male; L. Antenna, female. *(Modified from* Joseph)

Male Length 2.85 mm. Body generally ferruginous. Head depressed, 1.50-2.00 times as long as wide; length width ratio 577-747 : 350-385; narrowed in front; epistomal margin with 2 setae on either side of median projection; sparsely irregularly punctate; antennae with 4 segments; scape large, depressed, about as long as wide and longer than the 3 following segments combined; second segment as long as wide, third segment slightly shorter than thick; mandible longer than wide, with 3 teeth; pronotum less than 2 times as long as wide, longitudinally striate in part; mesonotum about as long as wide, metanotum propodeum slightly longer than wide; fore femora slightly less than 1.50 times as long as thick; tibiae about 2 times as long as thick, with odontoid spines along outer margin and longer ones apically; metatarsus with 3 odontoid spines; middle tibiae about 2.75 times as long as thick and with odontoid spines; hind tibiae about 2.50 times as long as thick and with odontoid spines; hind metatarsus about 1 75 times the following 3 segments combined; a little dilated and with 3 small odontoid spines; abdomen wider apically than basally; spiracular processes of tergite 8 about 0.60 of abdomen; tergite 10 with rounded cerci, with 3 short teeth.

Type locality Ceylon

Distribution Ceylon; India : Trivandrum, Agra

Host From figs of *Ficus glmerata* Roxb.

Sycophaga cunia (Joseph)

(Fig. 16)

1956 *Eukoebelea cunia,* Joseph, *Ann. Soc. Ent. France,* 125 : 101.

Female Length 1.80 mm. Body generally brown to blackish-brown; tergites with 5 transverse dark brown bands. Head about 1.33 as wide as long margin in front of eyes a little longer than the eye diameter; antennae with 13 segments : 1.1.2.6.3; scape a little more than 4 times longer than thick; pedicel subequal to but slightly thicker than scape; mandible tridentate; maxillary and labial palpi with one segment each; thorax with scutum about 1.50 as wide as long; scutellum longer than wide; fore wing a little more than 2.50 times longer than wide; vein *sm* 5 times *m; pm* 2 times *m* and 1.60 of *st;* fore coxa 2 times as long as wide; femur 3 times as long as wide; tibia shorter than femur; metatarsus a little more than the following 2 segments combined; hind coxa a little less than 3 times as long as wide; femur 4 times as long as wide; tibia 6 times longer than wide, with numerous setae and double spurs apically; metatarsus about 1.33 times the following 2 segments combined; abdomen subcompressed; about 1.50 times as long as wide; ovipositor about 4 times abdomen.

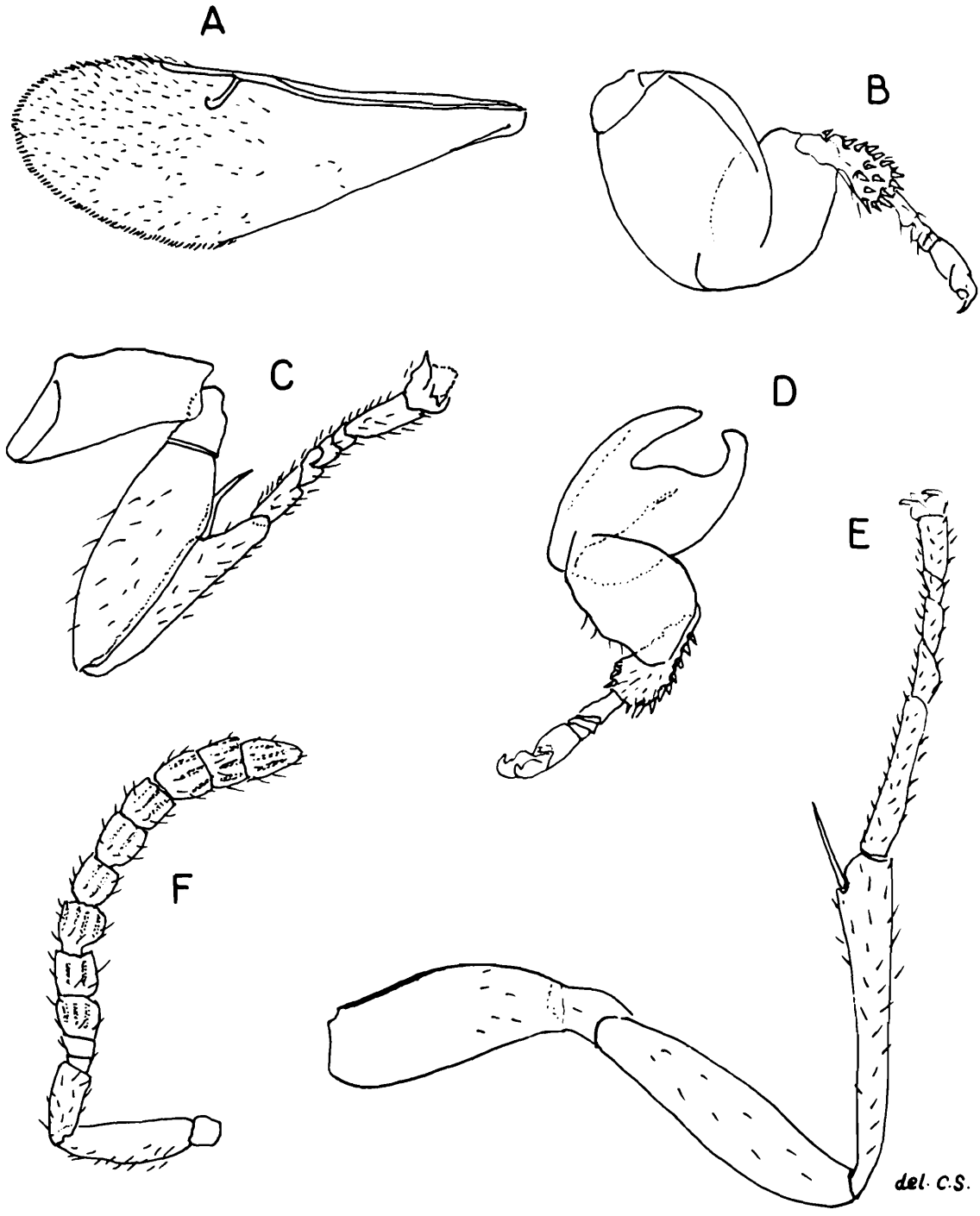

FIG. 16. *Sycophaga cunia* (Joseph) : A. Fore wing, female; B. Hind leg, male; C. Fore leg, female; D. Fore leg, male; E. Hind leg, female; F. Antenna, female. *(Modified from Joseph)*

Male : Length 2.00 mm. Head and thorax ferruginous-brown. Head depressed, 1.33 times as long as wide; margin in front of eyes weakly convex, converging forward; antennae flattened, with 4 segments; scape wider than long; second segment a little more than 0.50 of scape; third segment subquadrate, but somewhat shorter than pedicel; fourth segment a little shorter than third; pronotum 1 75 times as long as wide; metanotopropodeum longer than wide; fore coxa a little shorter than 1.66 its width; femur 1.50 times longer than wide; tibia about 0.75 of femur with numerous odontoid spines;

metatarsus with a single odontoid spine and about 1.50 times the following 3 segments combined; hind coxa 1.50 times as long as wide; femur a little more than 1.33 times as long as wide; with 7 odontoid spines; tibia with numerous odontoid spines; metatarsus longer than the following 3 segments combined; abdomen 2 times longer than wide; urite 8 about 0.80 of abdomen; cerci with 3 short dentate processes; penis sublanceolate.

Type locality : Dehra Dun.

Host : Figs of *Ficus cunia* Hann.

Platyscapa Motschulsky

1863 *Platyscapa,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36(2) : 48.
1904 *Platyscapa,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 235.
1909 *Platyscapa,* Schmiedeknecht, *Gen. Ins.,* 97 : 12.
1935 *Platyscapa,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 240.

Female : Head depressed, truncate, margined angularly behind; strongly excavate longitudinally on frons; ocelli little distinct; eyes small, ovate; antennae very short, with 9 segments; scape about 0.33 of the antenna, distinctly enlarged; pedicel minute; funicular segments 1-3 short, obconic; 4-7 abruptly enlarged forming an elongate club. Fore wings as in *Torymus;* vein *st* very short, *pm* much longer; maxillary palpi and hind tibia without pectinate process; abdomen elongate-oval, compressed; the first 3 tergites subequal. Ovipositor longer than body.

Type species : Platyscapa frontalis Motschulsky

Platyscapa frontalis Motschulsky

1863 *Platyscapa frontalis,* Motschulsky, *Bull. Soc. Imp. Nat, Moscou,* 36(2) : 48.
1935 *Platyscapa frontalis,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 240.
1938 *Platyscapa frontalis,* Mani, *Cat. Indian Ins.,* 23 : 32.

Length 1.75 mm. "Subelongata, subgibbosa, nitidissima, nigra, antennarum articulis duabus basalibus, capitis pars antica latissimo, abdomine subtus pedibusque rufo-testaceis; capite elongato-triangulare, valde depresso, glabro; thorace capitis latitudine, subconvexo, glabro, medio longitudinliter impresso, mesonoto on elevato, metanoto vix distincto, obtuso, subtestaceo; abdomine sessile, elongato-ovato, glabro, valde compresso; oviducto corpore paulo longiori, ramo medio testaceo; alis subalbidis, costa stigmatico fusco-testacea."

Type locality *Ceylon : Mt. Patannas

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* Now known as Sri Lanka.

Apocrypta Coquerel

1855 *Apocrypta,* Coquerel, *Rev. Mag. Zool. Guerin-Mene-ville,* (2) 7 : 367.
1904 *Apocrypta,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 235.
1909 *Apocrypta,* Schmiedeknecht, *Gen. Ins.,* 97 : 12.
1915 *Apocrypta,* Grandi, *Boll. Lab. Zool. portici,* 10 : 264-273.
1938 *Apocrypta,* Mani, *Cat. Indian Ins.,* 23 : 31.
1885 *Sycophaga,* Mayr (partim), *Verh. Zool. -bot. Ges. Wien,* 35 : 193.

Male Agrees with *Sycophaga* in general body shape and in antenna, but is separated by the clavate scape about 2 times as long as thick; mandible conical, without teeth; tarsal segments 2-4 not thicker than long; abdomen behind without filamentous appendage; head elongate, without deep groove.

Type species : Apocrypta perplexa Coq.

KEY TO SPECIES

1. Scape in female equal to the following 5 segments combined	*A. bakeri* Joseph
Scape in female longer than the following 5 segments combined	*A. westwoodi* Grandi

Apocrypta bakeri (Joseph)

(Fig. 17)

1952 *Lithothymus bakeri,* Joseph, *Agra Univ. J. Res.* (Sci.) 1 : 73.
1957 *Apocrypta bakeri,* Joseph, *Ann. Soc. Ent. France,* 125 : 110.
1967 *Apocrypta bakeri,* Wiebes, *Tijds, Ent.,* 110 : 440.

Female : Length 1.90 mm. Body generally iridescent-green, below yellowish-brown; scape and legs brownish-yellow; rest of antennae above sooty-brown; wings hyaline; veins amber coloured.

Head distinctly wider than long; epistome emerginate in front; frons with a V-shaped groove; eyes large; ocellar triangle obtuse; occiput concave; head sculpture leathery; antennae with 12 segments: 1.1.2.5.3; scape thicker in the middle than basally and apically, about 5 times as long as thick and subequal to the following 5 segments combined; pedicel about 0.33 of scape and 1.66 times as long as thick; second annellus larger than the first and with a whorl of short setae; first funicular segment longer than thick; second segment a little shorter than the first; third funicular segment subequal to the first; fourth segment longer than the third, about 1.50 times as long as thick; fifth segment a little shorter, but little less than 1.50 times as long as thick; club a little less than 3.50 times as long as thick; funicular segments with whorls of setae.

Mandibles a little more than 1.66 times as long as wide, bidentate, with stout, acute, apical tooth and stouter but obtuse,

subapical tooth; maxillary palpi with 4 segments, length ratios 8 : 9 : 6 : 6 : 5; labial palpi biarticulate, length ratios 6.5 : 6.

Thorax with fine leathery sculpture; pronotum wider than long, slightly sinuate in front; parapsidal furrows complete, deep; scutellum subovoid, longer than wide, with the margin parallel. Fore wings a little less than 2.50 times as long as wide; costal cell about 11 times as long as wide, with 6 setae; vein *sm : m : pm : st* ratio 250 : 125 : 100 : 50; hind wings about 4.50 times as long as wide. Fore coxa subtriangular, about 2.75 times as long as wide; femora

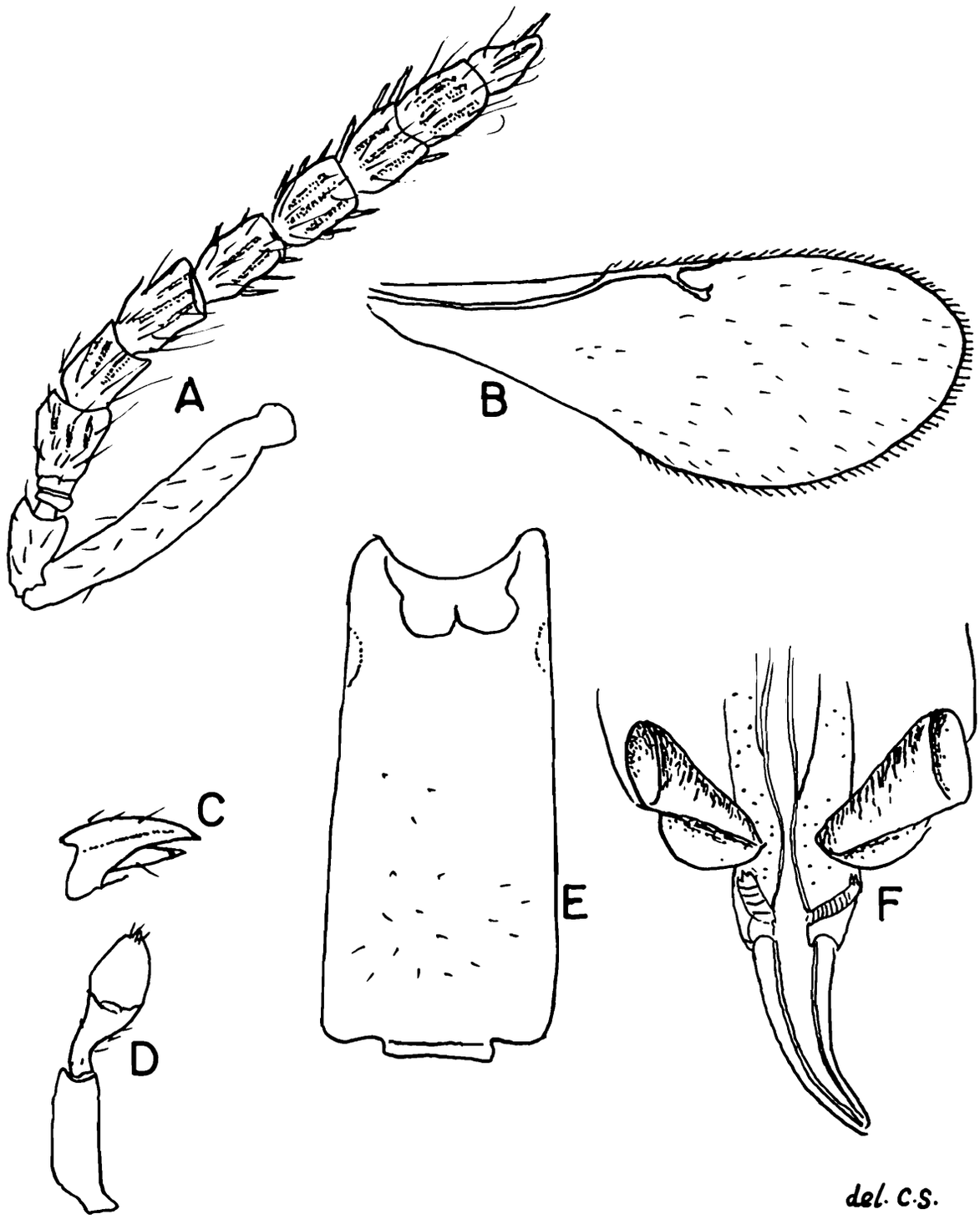

FIG. 17. *Apocrypta bakeri* (Joseph) : A. Antenna, female; B. Fore wing, female; C. Mandible; D. Antenna, male; E. Head; F. Spiracle, cerci and penes. *(Modified from* Joseph).

about 6 times as long as wide; fore tibiae shorter than femora, about 7 times as long as thick, with a long bifid apical spur; tarsi with 5 segments; metatarsus slightly less than the following 2 segments combined, with a pectinate series of setae beneath; middle coxa about 2 times as long as wide; tibiae long, 16 times as long as thick; middle femora about 8 times as long as wide; metatarsus about 1.33 times as long as the following segments combined; hind coxa long but shorter than femora and about 5 times as long as wide; hind femora about 6.50 times as long as wide; hind tibiae longer than femora, about 8 times as long as wide, with 10 spines at tip and tibial spurs double, unequal; metatarsus slightly more than 0.50 of tarsus; propodeum about 2.50 times as wide as long, slightly emarginate in front and deeply emarginate behind.

Abdomen 2.50 times as long as wide; sternites 2-4 produced below into a keel; tergite 8 with a paired spiracles; tergite 9 with paired cercoid, bearing setae; tergite 10 reduced, membranous; ovipositor 3.25 times abdomen.

Male : Length 2.60 mm. Body generally ferruginous-brown; abdomen and third antennel segment pale yellow; eyes brownish-black.

Head about 3 times as long as wide, with outer margins nearly straight, slightly converging in front; epistome sinuate and emarginate. Antennae inserted in the frontal impression, with 3 segments; scape a little less than 3 times as long as thick; second segment narrow basally, about 2 times as long as its maximum apical thickness; third segment subconical, 1.66 times as long as thick. Mandible slightly less than 2 times as long as thick, bidentate, with the apical tooth long and falcate, subapical tooth stout and obtuse.

Pronotum elongate, about 2 times as long as wide, margins slightly converging in front, rounded in front and deeply concave behind. Fore coxae more than 2 times as long as wide; femora widest in the middle, about 1.50 times as long as wide; tibiae a little over 2 times as long as wide, with odontoid spines outside and apically; tarsi almost unarmed, metatarsus slightly less than the rest of the segments combined; middle coxae equal to the fore coxae but stouter; middle femora about 1.50 times as long as wide; tibiae about 2 times as long as thick, with odontoid spines outside and at tip; metatarsus a little shorter than the following 2 segments combined; hind coxae larger than other coxae, about 1.50 times as long as wide; tibiae 2 times as long as wide; metatarsus subequal to the following 2 segments combined.

Abdomen a little more than 3 times as long as wide; tergite 8 with paired spiracles; tergites 9 and 10 elongate tubular, the latter with paired cerci bearing 3 claw-like teeth.

Type locality : Kottayam

Host : From figs of *Ficus hispida* Linn.

Apocrypta westwoodi Grandi

(Fig. 18)

1888 *Apocrypta perplexa*, Westwood, *Trans. ent. Soc. London*, 2 : 378-380.
1916 *Apocrypta westwoodi*, Grandi, *Boll. Lab. Zool. portici*, 10 : 273.
1916 *Apocrypta westwoodi*, Grandi, *Boll. Lab. Zool. Portici*, 11 : 232.
1938 *Apocrypta westwoodi*, Mani, *Cat. Indian Ins.*, 23 : 31.

Male : lateral margin of epicranium between eyes long, about 0.70-0.80 of head length in front of eyes. Length 4.00-4.50 mm; head 0.63-0.61 mm, pronotum 0.50 mm, mesonotum 0.38 mm, metanotum-propodeum 0.47 mm.

Body generally coloured like *Apocrypta longitarsus* Mayr, but a little darker; patch on base of abdomen darker

Head about 0.50 times longer than wide; lateral margin in front of eye 0.16-0.14 that behind; scape 2.50-3.00 times longer than wide; pedicel about 2 times longer than thick, about 0.66 of scape; third segment about 2 times longer than thick; mandible as typical in the genus; pronotum about 2 times as long as wide behind; mesonotum 1.50 times longer than wide; generally longitudinally striate; fore coxa and femora about 1.50 times longer than wide, tibia about 2 times; tarsus subequal to tibia; tarsal segments 2-3 as long as thick; fifth segment subequal to the preceding 3 segments combined; middle tarsus subequal to tibia; fifth tarsal segment somewhat shorter than the preceding 3 segments combined; hind tarsus subequal to or slightly shorter than tibia, fifth segment subequal to the preceding 3 segments combined; abdomen without median dorsal indurition of the third urotergite.

Female : Length 2.30 mm. Body metallic-green to blue; scape pale yellow; rest of antennae smoky-brown; second and fourth tergites pale yellow; legs yellowish-brown; wings hyaline.

Head wider than long; epistomal margin with a pair of long setae; head with a broad V-shaped groove extending from the antennal sockets backward and becoming shallower behind; ocellar triangle obtuse; antennae with 12 segments, of which 3-4 are annelli; segments 10-12 constitute club; scape about 5 times as long as thick and slightly more than the following 5 segments combined; second segment about 0.33 of scape; fifth segment about 1.33 times as long as thick; sixth longer than fifth; segments 7 and 8 subequal; club about 3 times as long as thick; mandible about 1.66 times as long as wide, bidentate; maxillary palpi with 4 segments; thorax with leathery sculpture; parapsidal furrows complete; fore wings about 2.50 times as long as wide; veins *sm : m : pm : st* ratio 30 : 12 : 10 : 6; hind wing about 4 times as long as wide; fore femora about 4 times as long as thick, tibiae shorter with bifid spur; metatarsus more than 0.50 of the following 4 segments combined; middle femora

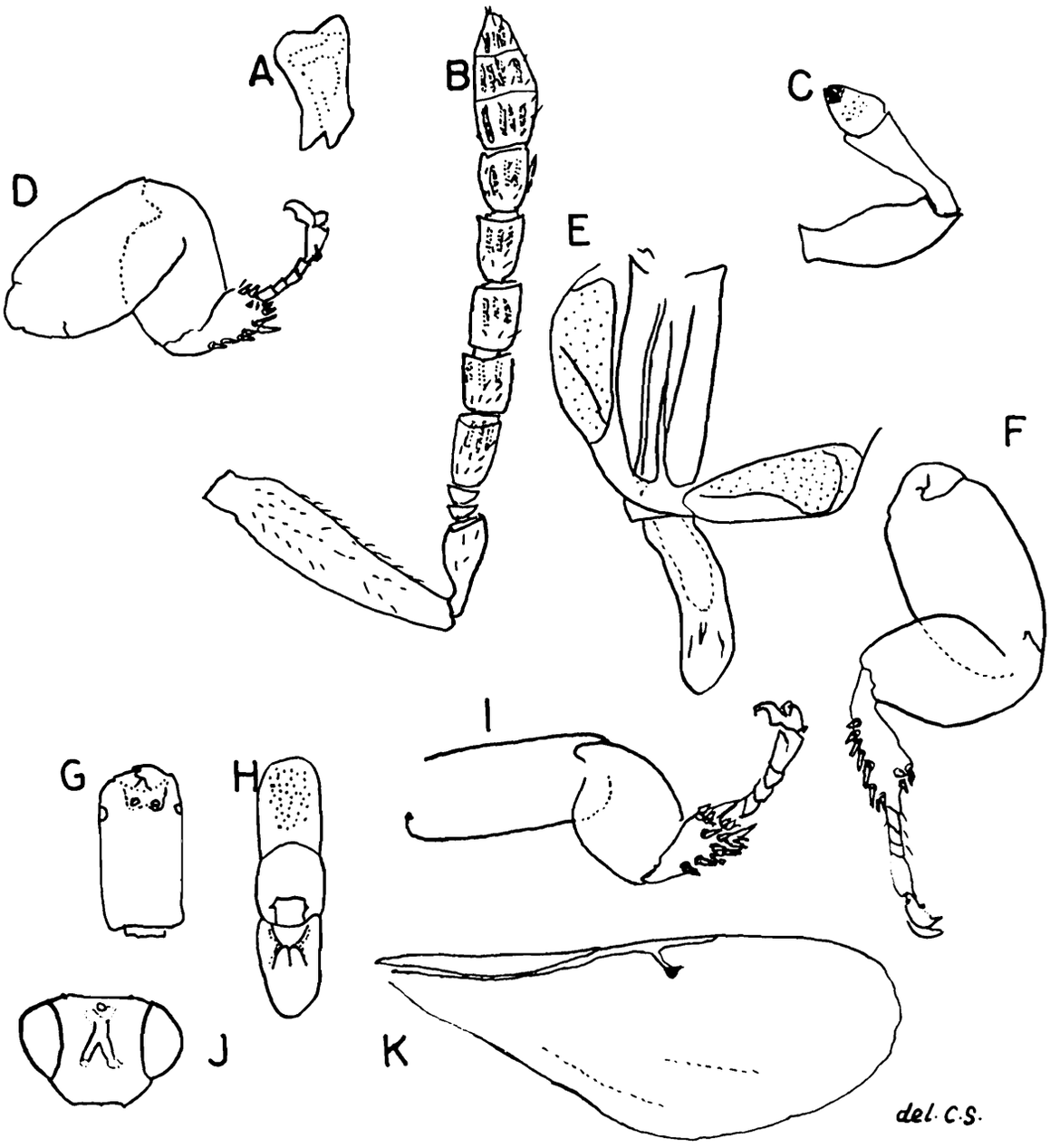

FIG. 18. *Apocrypta westwoodi* Grandi : A. Mandible, female; B. Antenna female; C. Antenna, male; D. Middle leg, male; E. Genitalia, male; F. Hind leg, male; G. Head, male; H. Thorax, male; I. Fore leg, male; J. Head, female; K. Fore wing, female *(Modified from* Joseph)

about 8 times as long as thick; tibiae very long; hind femora 5 times as long as thick; tibiae about 8 times as long as thick, without odontoid spines, unequal spurs; abdomen fusiform; tergites 2-4 large; tergite 8 with paired spiracles; ovipositor 4.50 times abdomen.

Type locality : Ceylon

Distribution : Ceylon, Java

Host : Fig of *Ficus glomerata* Roxb. in Ceylon; *Ficus variegata* Bl. in Java.

Liporrhopalum Waterston

1920 *Liporrhopalum,* Waterston,*Trans. ent. Soc. London,* 130.
1935 *Liporrhopalum,* Grandi, *Boll. Lab. Ent. Bologna,* 7 : 224.
1938 *Liporrhopalum,* Mani, *Cat. Indian Ins.,* 23 : 30.

Head short; eyes large, sparsely subpilose; scape broad, stout; funicle slender; segments 6 onwards much longer than thick; club long, cylindrical, not thicker than funicle; sensoria short, produced into long tubular processes; thorax normal; wings densely clothed with discal cilia; vien *m* with one pustule basally; vein *st* absent; spiracles small; abdominal tergites not incised behind.

Like *Platyscapa* Motschulsky but without vein *st* and funicle not stout apically.

Type species *Liporrhopalum rutherfordi* Waterston

Liporrhopalum rutherfordi Waterston

1920 *Liporrhopalum rutherfordi,* Waterston, *Trans. ent. Soc. London,* 130.
1935 *Liporrhopalum rutherfordi,* Grandi, *Boll. lab. Ent. Bologna,* 7 : 224.

Length 1.50 mm; wing expanse 2.75 mm. Body black to blackish-brown; middle tibiae and all tarsi paler brown; wings hyaline.

Head about 0.20-0.25 times wider than high; eyes about 0.50 of head depth; antennae about 0.66 of body; scape and bulla fused, wider than long; tip of scape angulate above pedicel; fourth segment minute, transverse, width length ratio 11 : 9; nearly completely concealed by base of horn-like process on the third segment; fifth segment with sensoria long, with distal angular projections; thereafter they are short with tubular processes; ratio of the following segments 11 10 : 13 : 13 : 17; mandibular appendage short, with 4 laminar ridges; below between the ridge from inner ventral tooth and posterior edge, one median ridge; propodeum entire; parapsides with 7-9 setae outside; scutellum broadly overlapping; metanotum with 3-4 bristles laterally; fore wings 2 times longer than wide; discal cilia dense; tip of fore tibia outside tridentate above, ventral prolongation tridentate; upper tooth emarginate; apical spur simple, more than 0.50 of tibia; metatarsus behind with 4-5 short bristles; tip of hind tibia ventrally outside with 3 curved teeth, the ventral-most largest; hind metatarsus ventrally excised; fore and hind tarsi, second and third segments subequal; third middle tarsal segment 0.20 times longer than second; fore metatarsus 0.50 times longer than the second segment; middle metatarsus somewhat longer than second segment and equal to third; hind metatarsus 2.75 times the second segment; tergites 1-4 subequal, 5-6 subequal, slightly shorther than 4; spiracle minute, circular; tergite 7 sclerotized; stylet short, wider than long,

rounded apically, with 2 apical bristles and one laterally; ovipositor about 0.33 of abdomen, with 8 bristles in apical 0.50; fifth sternite not cultriform, rounded, truncate distally.

Type locality : Ceylon : Pardeniya

FAMILY TORYMIDAE

1833 *Torymidae,* Walker, *Ent. month. Mag.,* 1 : 115.
1846 *Torymidae,* Walker, *List Chalc., Brit. Mus.,* 1 : 14.
1848 *Torymidae,* Walker, *List Chalc. Brit. Mus.,* 2 : 100.
1856 *Torymidae,* Förster, *Hymen. Stud.,* 2 : 19, 23, 43.
1871 *Torymidae,* Walker, *Notes Chalc.,* 2 : 19-36.
1874 *Torymidae,* Mayr, *Verh. zool.-bot. Ges. Wein,* 24 : 53-142.
1875 *Torymina* (partim), Thomson, *Hym. Skand.,* 4 : 11, 59.
1886 *Toryminae* (partim), Howard, *Ent. Amer.,* 1 : 198.
1897 *Torymidae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 243.
1904 *Torymidae,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 235.
1909 *Torymidae,* Schmiedeknecht, *Gen. Ins.,* 97 : 85.
1915 *Torymidae,* Girault, *Mem. Queensland Mus.,* 4 : 275.
1923 *Torymidae,* Ruschka, *Z. angew. Ent.,* 9 : 395-408.
1938 *Torymidae,* Mani, *Cat. Indian Ins.,* 23 : 32.
1979 *Torymidae,* Krombein *et al., Hymen. N. America,* 1 : 748.

Body mostly metallic-blue or green. Thorax not stout; prothorax strongly developed; fore wing with vein *st* very short; stigma usually almost sessile; hind coxae long, stout, usually 5-6 times as stout as the fore coxae, triangularly compressed, at least with an acute margin; ovipositor more or less long.

KEY TO SUBFAMILIES

1. Parapsidal furrows not well defined; abdomen in female conically produced; ovipositor not exserted — 7
   Parapsidal furrows distinctly developed; ovipositor prominently exserted, frequently very long — 2
2. Hind tibial spur single — 6
   Hind tibial spur double — 3
3. Hind margin of mesepisternum incised beyond the middle; metepimeron curved, dilated above apex; hind femora simple, neither dentate nor serrate — 4
   Hind margin of mesepisternum not incised; hind femora generally more or less swollen, serrate, or armed with 1 or 2 teeth beneath, sometimes much swollen and with several teeth beneath — 5
4. Fore wing with vein *st* always long; abdomen usually more or less depressed, if however subcompressed, then hypopygium large and

prominent; male often apterous; head usually oblong, with a triangular fovea in front for antennae; abdomen short, never tubularly elongate — *Idarninae*

Fore wing with vein *st* very short, its knob sessile or nearly so; abdomen usually subcompressed, hypopygium not prominent; male most often winged, if apterous, then head not oblong and without a triangular fovea — *Toryminae*

5. Hind femora not much swollen, usually as long as tibia, beneath only feebly serrate or with only 1-2 teeth beyond the middle near tip; tibiae straight; propodeum usually with a median keel, coarsely rugose or punctate; fore wing with vein *st* not very long, oblique, clavate — *Monodontomerinae*

Hind femora much swollen, with 4-8 teeth beneath; tibiae arcuate; propodeum with a forked keel; fore wing with vein *st* short, knob subsessile — *Podagrioninae*

6. Fore wing with vein *st* terminating in a large globose, dilated knob — *Megastigminae*

7. Abdomen in female conic-ovate, produced apically; in male oblong; usually with a peculiar sculpture in both the sexes; the middle tergites most usually with transverse rows of rounded punctae; fore wing with vein *st* very short — *Ormyrinae*

SUBFAMILY IDARNINAE

1846 *Agaonidae,* (partim), Walker, *List Chalcids, Brit. Mus.*, 1 : 23
1897 *Idarninae* Ashmead, *Proc. ent. Soc. Washington,* 4 : 235.
1904 *Idarninae,* Ashmead, *Mem. Carnegie Mus.*, 1(4) : 237.
1909 *Indarninae,* Schmiedeknecht, *Gen. Ins.*, 97 : 86.
1938 *Idarninae,* Mani, *Cat. Indian Ins.*, 23 : 32.
1979 *Idarninae,* Krombein *et al., Hymen. N. America,* 1 : 749.

Female : Resembles Agaontidae in wing venation but abdomen depressed, without the terminal segments bulging or abdomen compressed, with the last segment projecting; vein *st* long.

Male : Most usually apterous; with head oblong, having in front a triangular groove, in which the antennae lie; abdomen short, not tubularly produced. Parapsidal furrows distinct; ovipositor prominently exserted; hind tibial spurs double; hind margin of mesepisternum incised beyond the middle; hind femora simple; species mostly inquilines or parasites in figs.

KEY TO GENERA

1. Females — 2
Males — 13

2. Abdomen with at least the last 2 segments very slender and produced behind into a tubular tail; ovipositor very long — 3

	Abdomen not abnormally narrowed into a tubular tail behind	5
3.	Antennae with 13 segments, including 3 annelli; parapsidal furrows distinct	*Philotrypesis* Forst.
	Antennae with only 10 segments	4
4.	Pronotum long, conically produced; propodeum long; legs short, stout, fore femora incrassate	*Polanisa* Walker
5.	Scutellum flat, quadrate, with 2 longitudinal furrows	6
	Scutellum not flat, usually convex and generally but not always without grooved lines	7
6.	Body metallic coloured; flagellum filiform; funicular segments at least 2 times as long as thick; ocellar triangle obtuse	*Idarnes* Walker
7.	Ovipositor much longer than body	8
	Ovipositor shorter than body, at the most equal to body and sometimes not even evident	11
8.	Abdominal sternites widened downwards; hypopygium very prominent, ploughshare shaped; antennae with 12 segments including 2 annelli	*Goniogaster* Mayr
	Abdomen not as described above	9
9.	Parapsidal furrows disappearing behind	*Sycoryctes* Mayr
	Parapsidal furrows complete	10
10.	Antennae with only 9 segments; abdomen elliptic, strongly depressed	*Platyneura* Motschulsky
11.	Vein *pm* well developed	12
12.	Parapsidal furrows never complete; antennae with only 9 segments; ovipositor exserted	*Micranisa* Walker
13.	Tarsi with 5 segments	14
	Tarsi with 3 or 4 segments	25
14.	Wings present	17
	Wings absent	15
15.	Antennae inserted near the front margin of head	16
	Antennae inserted in the middle of face	24
16.	Head with a deep, large, triangular fovea for antennae	23
	Head without a fovea; wings totally absent.	20
17.	Wings reduced to paired filaments	18
	Wings reduced to a single pair of filaments or bristles	19
18.	Head oblong, scarcely wider than thorax; eyes minute; antennae separated by carina; hind metatarsus dilated	*Philotrypesis* Förster
19.	Head large, oblong, wider than thorax; antennae with 10 segments including a single annellus and inserted close together near front margin of head; mandibles porrect, stout, curved, with a tooth behind middle	*Sycoscapter* Westwood

Head oblong-quadrate, sinuate behind; antennae with 8-9 segments, without annellus, inserted close together near mouth; mandibles porrect, falcate, bidentate apically and with a tooth on the inner margin — *Sycoscapteridea* Ashmead

20. Antennae with 10-11 segments, only the last 3 segments closely united, inserted near mouth — 22

Antennae with 9 segments, which are closely united, most frequently with only 4-5 free segments, inserted farther from each other than to the sides of head — 21

21. Mandibles bidentate; labium and palpi reduced to membranous tube; antennae with 4 free segments, of which the third is small, transparent, membranous, annellus-like; head between clypeus and sides concave — *Idarnes* Walker

22. Head more or less depressed; tarsi with 5 segments; hind metatarsus often much compressed and with very long bristles — *Sycoryctes* Mayr

23. First flagellar segment only a little longer than second and not much longer than thick; mandibles very long, strong, toothed within; hind tibiae with short, stiff, bristles; tarsal segments slender; pronotum larger than rest of thorax; hind tarsi not longer than tibiae; metatarsus short — *Goniogaster* Mayr

24. Antennae with 10 segments including 2 annelli, inserted widely apart but close to the eyes laterally, scape very large, dilated, quadrate above and rounded below; head sinuate in front and behind and laterally incised behind to form a tooth in front of hind angles; wings reduced to pair of filaments; mandibles stout, bifid apically, produced and tridentate basally — *Micranisa* Walker

Antennae with 9 segments including a single annellus, inserted nearer together than to the eyes in the middle of face; scape very large, dilated, clavate; mandibles long, porrect, bidentate at tip, dilated and tridentate basally — *Walkerella* Westwood

25. Tarsi with 3 segments; wings absent — 27

Tarsi with 4 segments; wings reduced to filaments — 26

26. Head oblong-quadrate, emarginate or sinuate in front and behind; ocelli absent; antennae with 8-9 segments without annellus, inserted far above middle of face, scape large, dilated, clavate; mandibles large, porrect, equal to head, curved with bifid tips and inner margin armed with a tooth near middle, sometimes also truncate in the middle — *Otitesella* Westwood

27. Second funicular segment not shorter than first — 28

28. Antennae with 11-12 segments including 1-2 annelli and inserted much nearer to mouth than to the middle of face 29

29. Vein *pm* not longer than *st*; mandibles very long falcate, bidentate at tip; antennae with 11 segments; pronotum very long, rounded in front; scutellum not large, not subconvex; parapsidal furrows distinct *Sycobia* Walker

Sycoryctes Mayr

1885 *Sycoryctes,* Mayr, *Verh. zool.-bot. Ges. Wien,* 35 : 157.
1904 *Sycoryctes,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 238.
1909 *Sycoryctes,* Schmiedeknecht, *Gen. Ins.,* 97 : 92.

Antennae with 11 segments including one annellus, inserted close to the mouth; parapsidal furrows absent; scutellum convex, without grooves; vein *st* long, about 0.75 of vein *m*; ovipositor longer than body; head in male depressed, without groove in front; antennae with 10 or 11 segments, rather long, inserted near mouth; first funicular segment much longer than the following segments; mandible with one tooth apically; wings absent; hind tibia without long bristles; tarsi with 5 segments; hind tarsus longer than tibia; metatarsus long.

Type-species : Sycoryctes coccothraustes Mayr

Sycoryctes religiosa Wiebes

(Fig. 19)

1967 *Sycoryctes religiosa,* Wiebes, *Tijds. Ent.,* 110 : 428.

Female : Length 1.20-1.40 mm. Body rather uniform brown, extremities lighter

Head length : width ratio 9:11, with scattered short setae, longer towards epistomal margin; epistomal margin with a wide median lobe; eye 1.50 times gena; toruli separated for a distance shorter than their diameter; closer to the epistomal margin than to the inner margin of the eye; antenna with 11 segments; one annellus; club 3 segmented; scape 5 times as long as wide; 2.50 times pedicel; segments 4-8 subequal, with oblong sensilla and long, mainly basal setae; labial palpi segments 2, subequal; maxillary palpi segment ratio 6:8:3:8; mandible bidentate with 2 glands.

Pronotum not particularly long; parapsidal furrows obsolete behind; scutellum as long as wide, with small setae, finely reticulate; propodeum long, not constricted in the middle, with the usual longitudinal ridges and setae next to the subcircular spiracular peritremata; fore wing length width ratio 8:3; veins *sm* : *m* : *st* : *pm* ratio 20 : 6 : 5 : 10; stigma with 4 pustules; membrane, except for

the proximal third, with microtrichae; fringe rather short; hind wing 5 times longer than wide; membrane as in the fore wing, fringe longer; fore coxa almost as long as tibia, with several brown setae on the ventral apex; femur longer, tibial armature of one ventral spur, one antiaxial ventral spine, 4 conical spines close together in the dorsal angle, and 3 axial spines close to the spur; tarsal segments ratio 7 : 4: 3 : 2 : 6; mid leg slender; tibia as long as femur and trochanter combined, with one ventral spur and 2 slender spines; tarsal segments ratio 10 : 5 : 3 : 3 : 4; hind coxa as long as femur; tibia longer, with a comb of setae along the ventral margin, and more scattered dorsal setae, several slender spines close to the ventral apex, spurs 2 unequal and one antiaxial, conical spine, and about 8 conical spines along the apical portion of the dorsal margin; tarsal segments ratio 21 : 7 :5 :4 : 5, the first 3 of which bear very long dorsal spines.

Ninth urotergite more than 3 times as long as the apparent abdomen; no pygostyles.

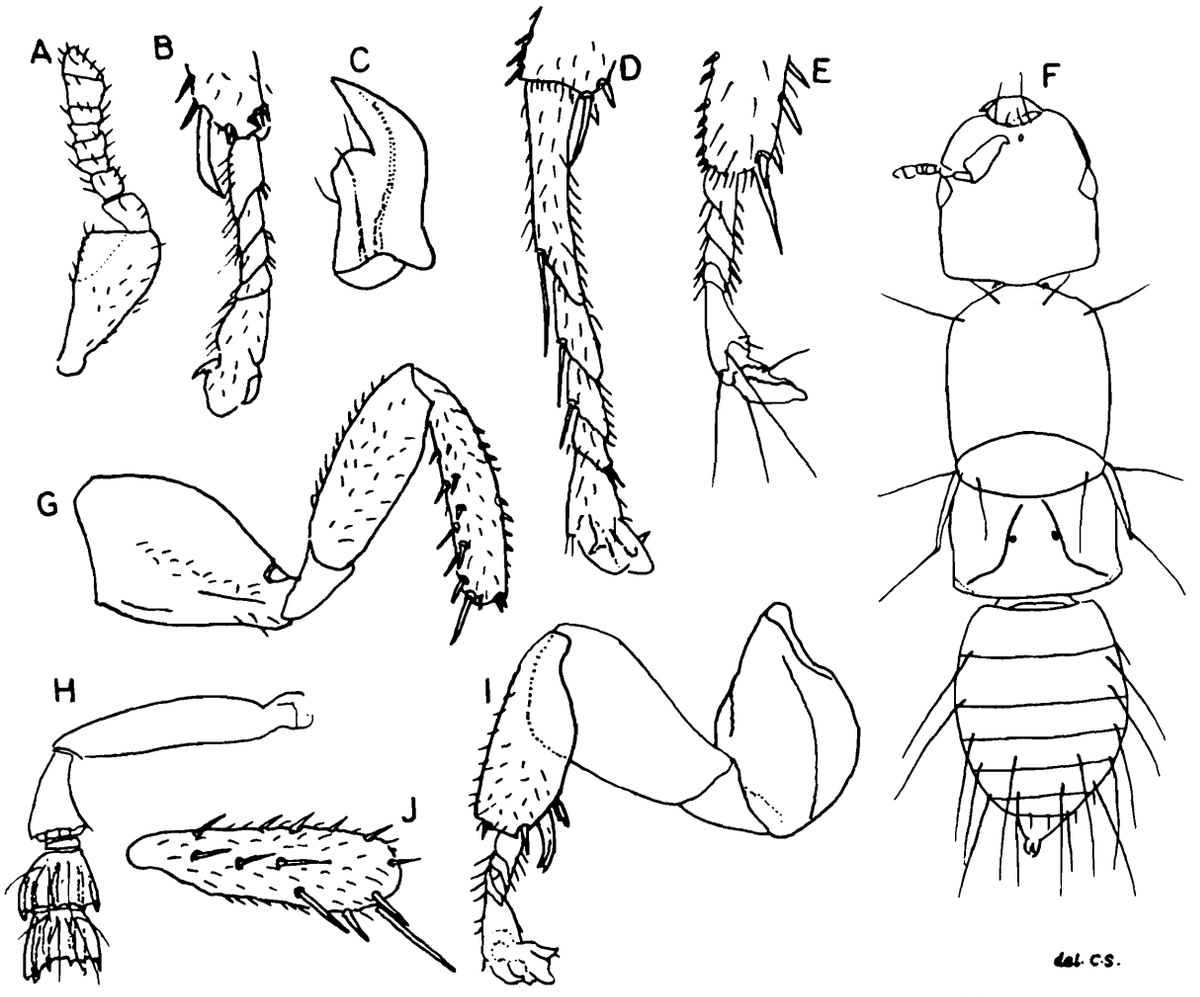

FIG. 19. *Sycoryctes religiosa* Wiebes : A. Antenna; B. Fore tibia and tarsus; C. Mandible; D. Middle tibia and tarsus; E. Hind tibia and tarsus; F. Dorsal aspect of body; G. Hind leg without tarsus; H. Basal segments of antenna; I. Fore leg; J. Middle tibia. (*Redrawn and modified from* Wiebes).

Male Length 1.20 mm. Body yellowish-brown.

Head slightly longer than wide; eyes rather large; epistomal margin simple, with long setae; distance between toruli as large as

their distance to the epistomal margin; antenna with 10 segments; scape wide, 4 times as long as pedicel; first funicular segment stalked, suggesting presence of a very short annellus; funicular segments 1 and 3 distinctly larger than the second, fourth and fifth, with an antiaxial sensillum; club 3 segmented; labial palpus one long segment; maxillary palpal segments ratio 6 : 7 : 4 : 8, mandible short, apical tooth falcate, the subapical truncate; 2 glands.

Thorax with long dorsal and lateral setae; pronotum about as long as wide; mesonotum short; metanotum and propodeum incompletely fused; combined length of mesonotum, metanotum and propodeum equal to pronotum; wing remnant rather wide, with long basal and subapical setae; fore coxa, femur and tibia subequal; tibial armature one ventral spur, with 2 stout spines proximad of it, and one distad; several short spines in the dorsal angle, and one apical spine visible in axial view; tarsal segment ratio 6 : 3 : 2 :2 : 14; middle leg rather robust; tibia almost as long as femur and trochanter combined, with several long, stout spines along the apical 0.50 of the ventral margin, along the dorsal margin, and on the antiaxial disc, and 2 unequal ventral spurs; tarsal segment ratio 8 : 6 : 4 : 3 : 15; fifth segment with very long setae; hind coxa almost as long as tibia; femur slightly shorter, with scattered setae; tibial armature of stout spines along the ventral margin and on the antiaxial disc, 2 unequal spurs, and many shorter spines along the dorsal margin; tarsus segment ratio as in the middle leg, fifth segment with very long setae.

All abdominal segments with a close vestiture of short setae, and with very long lateral setae. Genital claspers with 3 claws.

Wiebes remarks as follows : "Variation is remarkably slight in the large series of females, and no forms (e.g. such as in *Sycoryctes trifemmensis* Joseph, 1957) could be distinguished. The female is recognized from *S. trifemmensis* e.g. by several small differences in the spines of the fore and hind tibiae (cf. Joseph, 1957,) and by the relatively short ninth urotergite. The male of *S. religiosa* is different from either *S. trifemmensis* and *S. roxburgbi* Joseph, 1957 in a number of characters, viz. the number of antennal segments (ten vs. eight), the shape of the head (distinctly longer than wide in Joseph's species), the mouthparts (mandible without the distinctly truncate subapical tooth in Joseph's species, and the labial palpi 2-segmented), the presence of a wing remnant, and the spines and setae of the legs : e.g. both Joseph's species have dilated hind metatarsi, with long setae, while in *S. religiosa* the hind metatarsus is quite normal, but the fifth segment instead, bears long setae. No mention is made by Joseph (1957) of the long setae on the gastral terga, so characteristic for *S. religiosa*"

Type locality Pusa
Distribution : India, Ceylon
Host : Fig. of *Ficus religiosa* Linn.

Sycoryctes trifemmensis Joseph

(Fig. 20)

1956 *Sycoryctes trifemmensis,* Joseph, *Ann. Soc. Ent. France,* 25 : 110.

Female 1.14 mm, 1.56 mm and 1.87 mm in 3 forms described by Joseph; body generally iridescent blue-green; antennae pale yellow; head 1.25 times as wide as long; margin in front of eye less than 0.33 of eye diameter; with a V-groove; antenna with 11 segments : 1.1.1.5.3; scape 5 times longer than thick; pedicel 1.50 times longer than thick; segments 4-11 longer than thick; parapsidal furrows incomplete; scutellum as long as wide; fore wing less than 2.50 times longer than wide; vein *sm* 2 times *m*; *pm* distinctly longer than *m* and 2 times *st;* fore metatarus more than 0.50 of tarsus; hind coxa 2.66 as long as wide; femur about 4 times as long as wide; metatarsus a little longer than 0.50 of tarsus; ovipositor 5 times abdomen.

Male : Three forms described by Joseph, with lengths 1.47 mm, 1.65 mm and 1.93 mm; body generally yellowish-brown; head about 1.66 times as long as wide; eyes small; antenna with 8 segments, without annelli; scape depressed, about 1.50 times as long as wide; pedicel less than 2 times as long as thick; first funicular segment subguadrate; segments 2-4 transverse; pronotum 1.33 times as long as wide; wings absent, hind coxa large, 1.20 times as long as wide; femur subcompressed, about 1.66 times as long as wide; tibia about 1.2 of femur, with odontoid spines; metatarsus subcompressed, with 2 odontoid spines; genital armature with 2 distal, ventral flattened processes bearing long paired setae each and 2 dorsal distally dilated appendages with 4 short teeth; penis large, sublanceolate.

Type locality : Dehra Dun

Host Figs of *Ficus cunia* Hann.

Sycoryctes roxburghi Joseph

(Fig. 20)

1956 *Sycoryctes roxburghi,* Joseph, *Ann. Soc. Ent. France,* 125 : 113.

Male : Length 2.02 mm and 2.13 mm; body ferruginous-brown; head about 1.80 times as long as wide; scape about 1.50 times as long as wide; pedicel about 1 75 times longer than thick; pronotum about 1.25 times longer than wide; wings absent; hind coxa less than 2 times longer than wide; femur compressed; 2.66 times longer than wide; tibia distinctly longer than femur, with long odontoid spines; metatarsus large, compressed, with 6 macrochetae above and 2 odontoid spines below; genital armature with each of the ventral processes bearing 2 long setae and the dorsal 2 appendages with 4 short stout teeth; penis sublanceolate.

Type locality Dehra Dun.

Host : Figs of *Ficus roxburghii* Wall.

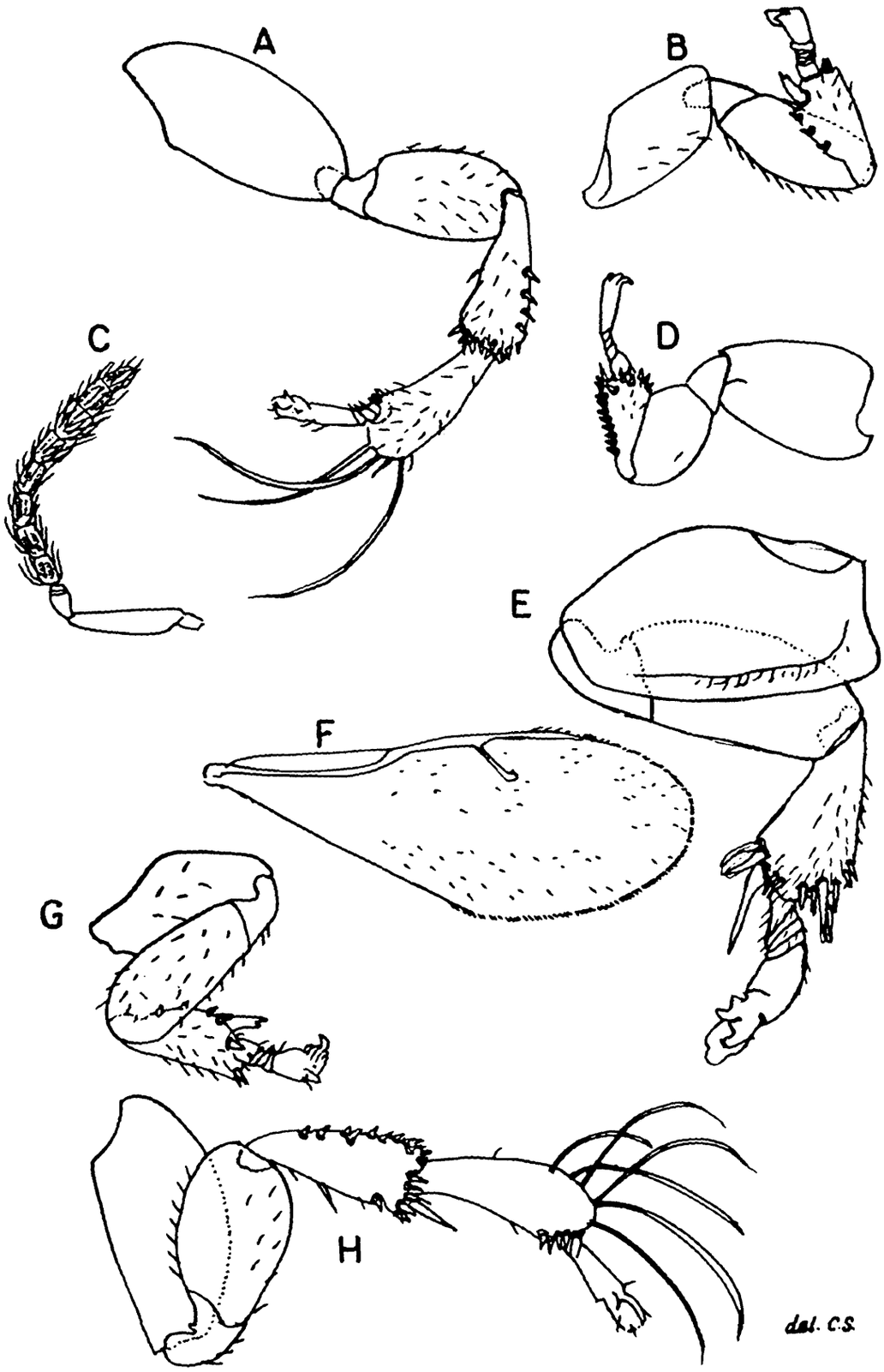

FIG. 20. A-F. *Sycoryctes trifemmensis* Joseph : A. Hind leg, male; B. Fore leg, male; C. Antenna; D. Middle leg, male; E. Hind leg; F. Fore wing, female. G-H. *Sycoryctes roxburghi* Joseph : G. Fore leg; H. Hind leg. *(Modified from* Joseph).

Idarnes Walker

1843 *Idarnes,* Walker, *Ann. Mag. Nat. Hist.,* 12 : 47.
1885 *Ganosoma,* Mayr. *Verh. zool-bot. Ges. Wien,* 35 : 204.
1885 *Tetragonaspis,* Mayr, *Verh. zool-bot. Ges. Wien,* 35 : 205.
1904 *Idarnes,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 238, 239.
1909 *Idarnes,* Schmiedeknecht, *Gen. Ins.,* 97 : 91.
1938 *Idarnes,* Mani, *Cat. Indian Ins.,* 23 : 33.
1979 *Idarnes,* Krombein *et al., Hymen. N. America,* 1 : 750.

Body metallic; antennae filiform; scutellum flat, with 2 longitudinal grooves behind; abdomen normal; in male head between clypeus and gena concave; antennae inserted near the oral border with free segments of which the third small, membraneous; wings totally absent; tarsi with 5 segments.

Type species : Idarnes carme Walker

Idarnes testacea (Mayr)

(Fig. 21)

1885 *Tetragonastis testacea,* Mayr, *Verh. zool-bot. Ges. Wien,* 35 : 157.
1953 *Sycophagella agraensis,* Joseph, *Agra Univ. J. Res.* (Sci.) 2(1) : 54.
1956 *Idarnes testacea,* Joseph, *Ann. Soc. Ent. France,* 125 : 103.

Female : Length 1.65 mm. Body generally brown; head, abdomen, ovipositor, antennae except the yellowish-brown scape and pedicel, sooty-brown, with iridescent sheen; thorax and ovipositor yellowish-brown; eyes and veins amber coloured; ocelli pinkish.

Head about 1.50 times as long as wide; epistome broadly concave in the middle; margin of head in front of eye about 0.66 of eye; margin behind rounded; ocellar triangle obtuse; face rugulose; scape thickest in the middle, slightly more than 3 times as long as thick; pedicel about 1.50 times as long as thick; annellus large, about 0.33 as wide as long; first funicular segment a little longer than thick; funicular segments 2-6 subequal, gradually becoming thicker; club about 2.75 times as long as thick, with the terminal 2 segments fused together; mandible longer than wide; maxillary palpus longer than thick, with paired acute setae apically; labial palpus about 2 times as long as thick, with 3 acute setae apically.

Pronotum wider than long, narrowed in front, concave in the middle in front; mesonotum reticulate; scutellum as wide as long. Fore wings about 2.16 times as long as wide; costal cell about 10 times as long as wide, with about 12 setae in the distal 0.50; vein *sm* about 3.66 times vein *m;* vein *pm* slightly shorter than 2 times *m* and slightly more than 2 times *st;* hind wing about 3 times as long as wide.

Fore coxae subtriangular, slightly more than 1.50 times as long as thick; femora elongate-oval, a little less than 3 times as long as thick; tibiae subclavate, about 6 times as long as thick, spur bifid; tarsi with 5 segments, armed with spines and setae; metatarsus subequal to the following 3 segments combined, with 6 spines in a pectinate series beneath; middle femora about 5.50 times as long as thick; tibiae subclavate and slightly longer than femora and 10 times as long as thick, spur single; tarsi with 5 segments, armed with setae

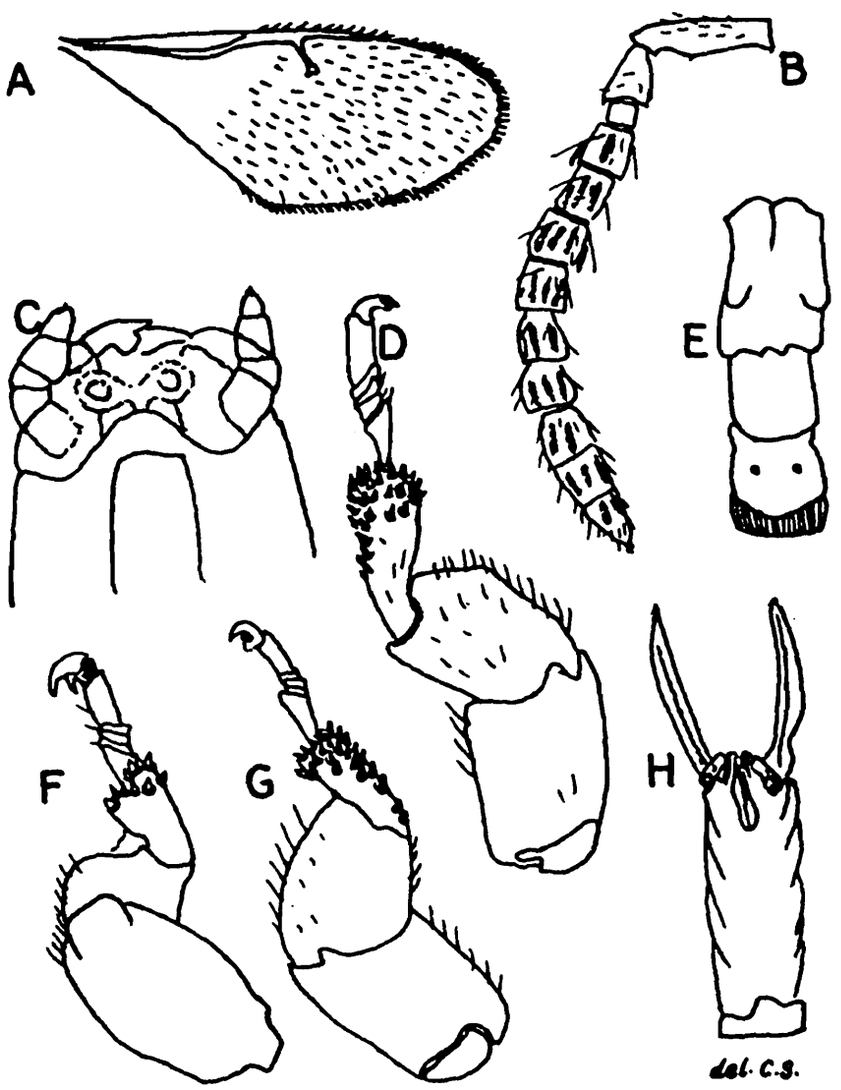

FIG. 21. *Idarnes testacea* Mayr : A. Fore wing; B. Antenna; C. Head; D. Hind leg; E. Thorax; F. Fore leg; G. Middle leg; H. Abdomen.

and spines; metatarsus distinctly longer than the following 4 segments combined; hind coxae large, 2.66 times as long as wide; hind femora long, about 4 times as long as thick; tibiae clavate, distinctly longer than femora, with numerous setae and unequal double spurs apically; tarsi shorter than tibiae, with 5 segments, metatarsus longer than the following 4 segments combined; propodeum wide in front, narrowed and emarginate behind, spiracles with subovoid peritreme near the front margin.

Abdomen longer than wide; tergite 8 with subovoid spiracular peritreme; ovipositor over 8 times as long as abdomen.

Male Length 2.40 mm. Body generally yellowish-brown; mandibles, tibiae and parts of body ferruginous; eyes black.

Head depressed, 2 times as long as wide, slightly narrowed in front; epistome with 2 sublateral rounded prominences separated by a notch with a short acute median process; head bipartite into a smaller anterodorsal part with antennae and eyes and a larger posteroventral part with mouth parts; antennae with 4 segments, flattened; radicle wider than long, subtriangular; scape flattened, as long as wide; pedicel subtriangular, a little longer than wide; third segment as long as wide, narrow basally, flat and subtrapezoid; fourth segment depressed, wider than long, narrowed apically, with 6-8 sensoria apically; mandibles a little less than 1.50 times as long as wide, tridentate, with the apical tooth longer and acute.

Pronotum almost 2 times as long as wide, front margin cleft in the middle to nearly 0.50 of length, laterally notched; mesonotum a little longer than wide; fore coxae a little longer than 2 times width, subcompressed, elongate-oval; femora short, dilated and slightly longer than wide; tibiae a little more than 2 times as long as thick and subequal to femora, with odontoid spines along the outer margin and distally; tarsi with 5 segments, shorter than tibiae; metatarsus without odontoid spines and subequal to the following 3 segments combined, segments 2-4 transverse; middle coxae stout, a little more than 1.50 times as long as thick; femora dilated, longer than wide; tibiae shorter, less than 2.50 times as long as thick, with many odontoid spines; tarsi with 5 segments, subequal to tibiae; metatarsus a little more than 1.50 times the following 3 segments combined and with 3 odontoid spines distally; hind coxae 1.66 times as long as wide; tibiae shorter, 2.50 times as long as thick, with many odontoid spines along the outer margin and in the apical 0.50; femora stout, compressed, 1.60 times as long as wide; tarsi with 5 segments, slightly shorter than tibiae; metatarsus about 1.50 times the following 3 segments combined and with 3 large odontoid spines distally.

Abdomen narrowed basally, as long as wide, longitudinally striated above; spiracular processes on tergite 8 about 0.80 of abdomen and shaped differently from those in *Sycophaga brevitarsus*

Grandi; tergite 9 with some long setae laterally; tergite 10 with paired apically rounded cerci, each with 3 dentate processes.

Type locality : Agra

Host From figs of *Ficus glomerata* Roxb.

This species superficially resembles *Sycophaga brevitarsus* Grandi but is readily separated by the smaller body size and differences in colour in the female; but males are less readily separated.

Goniogaster Mayr

1885 *Goniogaster,* Mayr, *Verh. zool-bot. Ges. Wien,* 35 : 157, 240.
1904 *Goniogaster,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 238, 240.
1909 *Goniogaster,* Schmiedeknecht, *Gen. Ins.,* 97 : 92.
1938 *Goniogaster,* Mani, *Cat. Indian Ins.,* 23 : 34.

Female : Scutellum convex, without longitudinal furrows; antennae with 12 segments, including 2 annelli; abdomen swollen ventrally; terminal abdominal segments ploughshare shaped and strongly projecting; ovipositor longer than body.

Male With head more or less flat; antennae long, inserted close to the mouth, with 10 segments, the last 3 segments closely articulated; the first funicular segment a little longer than the second and not much longer than thick; mandible very long and stout, dentate; pronotum, quadrate, larger than mesonotum and propodeum combined; wings absent; hind tibia short, stout; tarsi with 5 segments; hind tarsi not longer than tibiae; metatarsus short.

Type-species : Goniogaster variicolor Mayr

Goniogaster variicolor Mayr

1885 *Goniogaster variicolor,* Mayr. *Verh. zool. -bot. Ges. Wien,* 35 : 241.
1904 *Goniogaster variicornis,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 238.
1909 *Goniogaster variicolor,* Schmiedeknecht, *Gen. Ins.* 97 : 92.
1938 *Goniogaster variicolor,* Mani, *Cat. Indian Ins.,* 23 : 34.

No description of the species is available.

Type locality : Java

Distribution : Java; India : Coimbatore

Host : From figs of *Ficus (Cystogyne) subopposita* Meig.

Platyneura Motschulsky

1863 *Platyneura,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 49.
1904 *Platyneura,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 238.
1909 *Platyneura,* Schmiedeknecht, *Gen. Ins.,* 97 : 93.
1938 *Platyneura,* Mani, *Cat. Indian Ins.,* 23 : 34.

Female : Head flattened, somewhat triangular in front and with a sinuate excavation behind; eyes circular; antennae inserted in the middle of face, slightly clavate, with 9 segments, segments 4-8 transverse, cylindrical; segments 2 and 3 a little longer, obconic, segment 9 longer, stout, oval and apically acuminate; scape short; thorax slightly convex, triangular; pronotum transverse, with a trapezoid impression in the middle; parapsidal furrows present; vein *st* well developed; abdomen as long as thorax; elliptic, strongly depressed, acuminate apically; ovipositor longer than body; tarsi with 5 segments, metatarsus equal to the rest of the segments combined.

Type-species *Platyneura testacea* Motschulsky.

Platyneura testacea Motschulsky

1863 *Platyneura testacea,* Motschulsky, *Bull. Soc. Imp. Nat., Moscou,* 36 (3) : 50.
1909 *platyneura testacea,* Schmiedeknecht, *Gen. Ins.,* 97 : 93.
1938 *Platyneura testacea,* Mani, *Cat. Indian Ins.,* 23 : 34.

Length 1 75 mm.

"Depressa, elongata, parallela, subopaca, testacea, pedibus pallidus, tarsorum unguiculis ocellisque nigris, oculis ferrugineis, abdomine piceo annulato, oviducto nigropiceo; vapite subtransverso, postice truncato, densissime subtiliter punctulato vertice subquadrato, medio subexcavatoimpresso, ocellis transverso positis; thorace capitis latitudine, elongato-triangulare, densisiime subtiliter puncutlato segmentis subconvexis, mesonoto ovato, apice arcuatim subtruncato; abdomine subelongato-elliptico, depresso, supra concavo; pedibus gracilis, femoribus linearis; oviducto corpore duplo longiori."

Type locality *Ceylon : Summit of Mt. Patannas
Distribution *Ceylon

Sycoscapter Westwood

1883 *Sycoscapter,* Westwood, *Trans. ent. Soc. London,* 34.
1904 *Sycoscapter,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 239.
1909 *Sycoscapter,* Schmiedeknecht, *Gen. Ins.,* 97 : 96.
1938 *Sycoscapter,* Mani, *Cat. Indian Ins.,* 23 : 36.

Male Head large, elongate, wider than thorax; in front with a large deep triangular groove; posterolateral angles rounded;

* Now known as Sri Lanka.

antennae with 10 segments including one annellus, inserted close to the mouth border; mandible projecting, stout, acute, with one tooth behind the middle; wings reduced to bristle-like filaments; tarsi with 5 segments.

Type-species : Sycoscapter stabilis (Walker)

Sycoscapter stabilis (Walker)

1871 *Idarnes stabilis,* Walker, *Notes Chalc.,* 4 : 62.
1871 *Sycoscapter orientalis,* Walker, *Notes Chalc.,* 4 : 62.
1883 *Idarnes stabilis,* Westwood, *Trans. ent. Soc. London,* 38.
1883 *Sycoscapter insignis,* Saunders, *Trans. ent. Soc. London,* 35.
1909 *Sycoscapter stabilis,* Schmiedenknecht, *Gen. Ins.,* 97 : 96.
1909 *Sycoscapter insignis,* Schmiedeknecht, *Gen. Ins.,* 97 : 96.
1938 *Idames stabilis,* Mani, *Cat. Indian Ins.,* 23 : 33.
1938 *Sycoscapter insignis,* Mani, *Cat. Indian Ins.,* 23 : 36.
1953 *Indothymus crenulatus,* Joseph, *Agra Univ. J. Res.* (Sci.) 2 : 77.
1956 *Sycoscapter insignis,* Joseph, *Ann. Soc. Ent. France,* 125 : 107.
1967 *Sycoscapter stabilis,* Wiebes, *Tijds. Ent.,* 11 : 408.

Female : Length 1.70 mm. Colour of head and thorax metallic, with a greenish hue; abdomen brown, antennae and the legs yellowish-brown but for the slightly darker scape and coxa.

Head not quite as long as wide across eyes, finely reticulate and scattered small setae; wide but shallow groove from front ocellus to toruli; with a low, median ridge; eye longer than gena; epistomal ridge with a rather long median process; toruli rather close; their distance to the inner orbital margin greater than distance between the toruli; antenna short; scape 3 times the pedicel; segments 3-4 annelliform; segments 5-9 subequal, transverse, with 2-4 large, oblong sensilla visible in antiaxial aspect, and scattered long setae; in axial aspect the row of sensilla is more regular, consisting of 4-5 sensilla; segments 10-12 club, tenth is distinctly widest, others more slender, subequal; labial palpi segments ratio 5 : 2; maxillary palpi segments ratio 12 : 19 : 7 : 20; mandible bidentate, second tooth blunt, almost truncate.

Thorax reticulate and with scattered small setae; pronotum transverse, short; scutum 2 times as long, parapsidal furrows obsolete in posterior 0.66; scutellum rounded, regularly pentagonal; metanotum short, for a great part concealed by scutellum; propodeum not very long, with longitudinal ridges medially and laterally of the spiracular peritremata; peritremata circular in outline; some 10 long setae occur next to the peritremata. Fore wing : veins *sm : m : st : pm* ratio 12 : 12 : 7 : 14, vein *sm* with 2 pustules, *st* with 4; almost hyaline, with a variable number of long setae below *m;* fringe not very long; hind wing 3 times as long as wide; with 3 hamuli; fringe longer than in fore wing; fore coxa more than 2 times trochanter, distinctly shorter than the femur with some long setae

on the axial surface; femur with scattered setae; tibia not quite as long as the femur; pubescence somewhat denser than on femur, apical armature consisting of 2 conical spines in the dorsal angle, 2 longer blunt spines at the antiaxial apical margin close to the long ventral spur, 2 acute subapical spines at the ventral angle, and 2 acute spines at the axial apical margin; tarsal segments ratio 10 : 6 : 4 : 4 : 9; middle tibia about as long as the femur and trochanter combined, with a ventral spur of normal length accompanied by a shorter spine at the antiaxial surface, the dorsal angle with a short spine; tarsal segments ratio 14 : 8 : 6 : 5 : 6; hind leg with faint reticulate sculpture on the coxa; coxa nearly as long as femur, distinctly shorter than tibia, with 5-7 long setae at the axial surface; trochanter 0.33 of coxa; femur subglabrous axially but for some rather long setae on the disc, moderately pubescent antiaxially; ventral and dorsal margins of the tibia with long setae, a row of spine-like setae along the distal third of the ventral margin, and a row of 7 conical spines along the dorsal; apical armature of the following spines visible in antiaxial aspect; spurs, 2 ventral spines and 2 dorsals; in axial aspect the spines; tarsal segments ratio 22 : 10 : 7 : 5 : 13; apical spine of metatarsus not reaching middle of second segment.

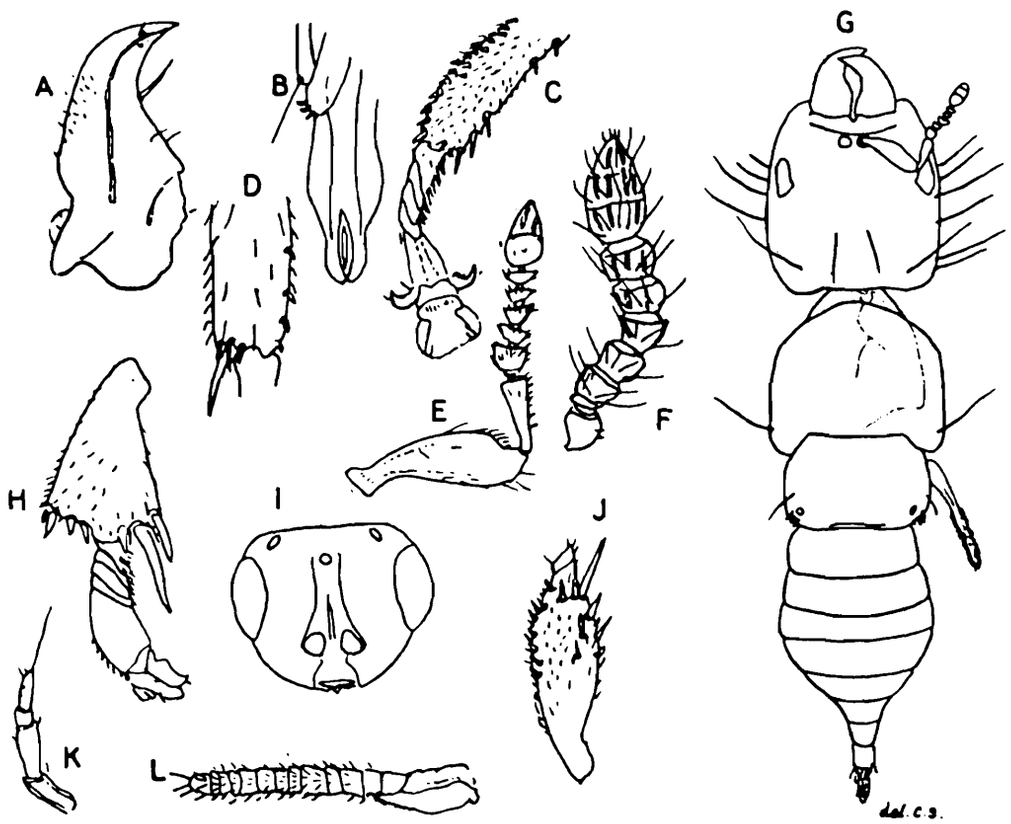

FIG. 22. *Sycoscapter stabilis* (Walker) : A. Mandible, male; B. Genitalia, male; C. Apex of hind tibia and tarsus, male; D. Apex of hind tibia, female; E. antenna, male; F. Antenna, female; G. Dorsal aspect of body, male; H. Fore tibia and tarsus, male; I. Head in front view, female; J. Middle tibia, male; K Maxillary palpus, male; L. Wing remnant, male.

Abdomen ends with the eighth segment, ninth being tubularly lengthened to about 4 times the segments 3-8 combined; distal margins of tergites are not distinctly crenulate; pygostyles wanting.

Male : Length 1.20 mm. Colour uniform yellow-brown.

Head longer than wide, with several long lateral and dorsal setae; eyes large; epistomal margin bisinuate, distance from lobes to toruli 0.33 of gena, and 2 times as long as the shortest distance between the toruli; antenna with 11 segments; scape more than 2 times pedicel; first flagellar segment annelliform; segments 2-5 characteristically cup-shaped; the second largest, with an axial sensillum; fourth almost as large, with an antiaxial sensillum; club 3 segmented; first about as long as the other 2 combined, which bear oblong sensilla and sensillar rods; labial palpi segments ratio 2 : 1; maxillary palpi segments ratio 6 : 6 : 2 : 5; mandible long, falcate, with one apical tooth, several setae and blunt denticles along the axial margin; 2 glands.

Pronotum wider than long, with long lateral setae close to the posterior angles; mesonotum, metanotum and propodeum fused, narrower than the pronotum, much wider than long, with setae close to the propodeal stigmata; wing remnant a hyaline basal part, and a distal filament of variable length, with transverse folds and wrinkles as if articulated; fore coxa large, plate-like, with long setae, glabrous axially, as long as trochanter and femur combined; femur with sparse setae; tibia expanded distally, with scattered setae, apical armature of 2 unequal ventral spurs accompanied by several stout spines, a row of spines along the antiaxial margin, and one more robust and longer spine in the dorsal angle; tarsal segments ratio 2 : 1 : 1 : 1 : 6; mid coxa subglobular, as long as the femur; tibia with spines as long as distal 0.50 of dorsal margin, a long spur and several stout spines in the ventral angle and along apical margin, and 2 stout spines on antiaxial disc; tarsal segments ratio 5 : 3 : 3 : 3 : 16; hind leg rather slender, with sparse pubescence; coxa as long as trochanter-femur combined; tibia with dorsal spines as in the mid leg, 2 ventral spurs and accompanying ventral spines, and with a set of more slender spines along the axial, apical margin; tarsal segments ratio 7 : 4 : 4 : 3 : 13.

Abdomen about as long as thorax; genitalia with claspers and parameres.

Type locality "India"

Distribution Calcutta, Trivandrum, Trichy.

Host Figs of *Ficus bengalensis* Linn.

Sycoscapter infectorius (Joseph)

(Fig. 23)

1953 *Indothymus infectorius,* Joseph, *Agra Univ. J. Res.* (Sci.) 2 : 74.

1956 *Sycoscapter infectorius,* Joseph, *Ann. Soc. Ent. France,* 125 : 107.

Female : Length 1.27 mm. Body generally metallic-green; scape and funicle yellowish-brown, antennae otherwise dark brownish-yellow; legs hony-brown; eye pale pinkish; wings hyaline.

Head wider than long; epistome with paired sublateral concavities and median acute process; margin of head before eyes a little shorter than eye; with a median longitudinal shallow groove; ocellar triangle obtuse; margin of head behind eyes weakly concave and rounded behind; closely irregularly punctate; antennae with 12 segments; scape 4 times as long as thick, reduced apically and subequal to the 5 following segments combined; pedicel about 0.40 of scape and slightly less than 1.50 times as long as thick; 2 annelli, the second annellus slightly larger; first funicular segment a little longer than thick; second a little longer; third as long as thick; fourth and fifth equal to the third, but thicker; club stout; mandibles about 1.50 times as long as wide, apical tooth curved, acute, subapical tooth short, obtuse; terminal palpal segments longest; terminal labial palpal segment shorter than the basal.

Pronotum wider than long, narrowed in front; mesonotum closely irregularly and minutely punctate, distinctly separated from each other by their own diameter; parapsidal furrows indicated only anteriorly; propodeum divided into median and 2 lateral parts; fore wing about 2.50 times as long as wide; costal cell 9 times as long as wide; vein *sm* a little less than 1.50 times *m; pm* about 2 times *st;* hind wing over 5 times as long as wide; fore coxae more than 2 times as long as thick; femora a little less than 4 times as long as thick; tibiae shorter, subclavate, 4 times as long as thick; with 2 spines and 3 odontoid spines and bifid spur; tarsi with 5 segments; metatarsus equal to the following 2 segments combined, with pectinate series of setae; middle coxae a little wider than long; femora about 4.50 times as long as wide; tibia about 9 times as long as thick, subclavate with long spur; tarsi with 5 segments, metatarsus equal to the 2 following segments combined; hind coxae about 2.50 times as long as wide; femora 3 times as long as wide; tibiae 6 times as long as thick; subclavate, with 6 odontoid spines and unequal pair of spurs; tarsi with 5 segments, metatarsus longer than the 3 following segments combined; abdomen 2.66 times as long as wide; ovipositor about 5 times as long as abdomen.

Type locality : Agra

Host : From figs of *Ficus infectoria* Roxb.

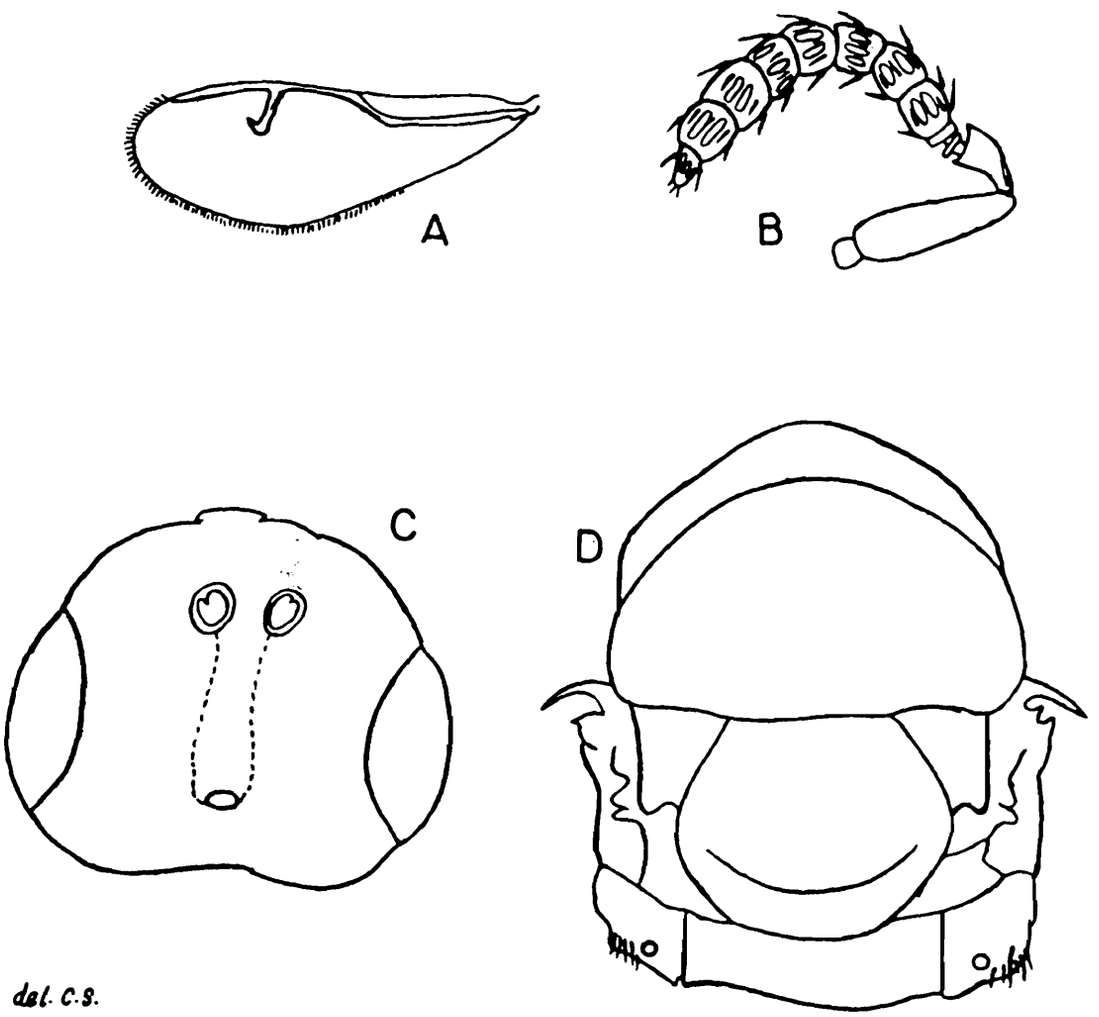

FIG. 23. *Sycoscapter infectorius* (Joseph), female : A. Fore wing; B. Antenna; C. Head; D. Thorax. *(Modified from* Joseph).

Sycoscapter triformis Joseph

(Fig. 24 & 25)

1956 *Sycoscapter triformis,* Joseph, *Ann. Soc. Ent. France,* 125 : 103.

Female Length 2.20 mm. Body generally iridescent-green or blue; legs pale brownish-yellow. Head about 1.33 times as wide as long, with a median angular, apically rounded process on epistomal margin; margin in front of eyes about 0.75 of eye diameter; antennae with 12 segments : 1.1.2.5.3; scape about 5 times longer than wide; pedicel less than 0.33 of scape; mandible bidentate, a little more than 1.50 times as long as wide; maxillary palpus with 3 and labial palpus with 2 segments; scutoscutellum about 2 times as wide as long; fore wing 2.50 times longer than wide; vein *sm* 1.33 times *m; pm* hardly longer than *m; st* about 0.50 of *pm;* fore coxa 2 times longer than wide; femur 3.50 times longer than wide; tibia shorter than femur, with 3 odontoid spines; tarsi 0.60 of tibia; metatarsus equal to the

following 2 segments combined; hind coxa about 0.63 times as long as wide, tibia with about 9 odontoid spines; metatarsus slightly more than the following 2 segments combined; abdomen 1.75 times as long as wide; ovipositor about 6 times abdomen.

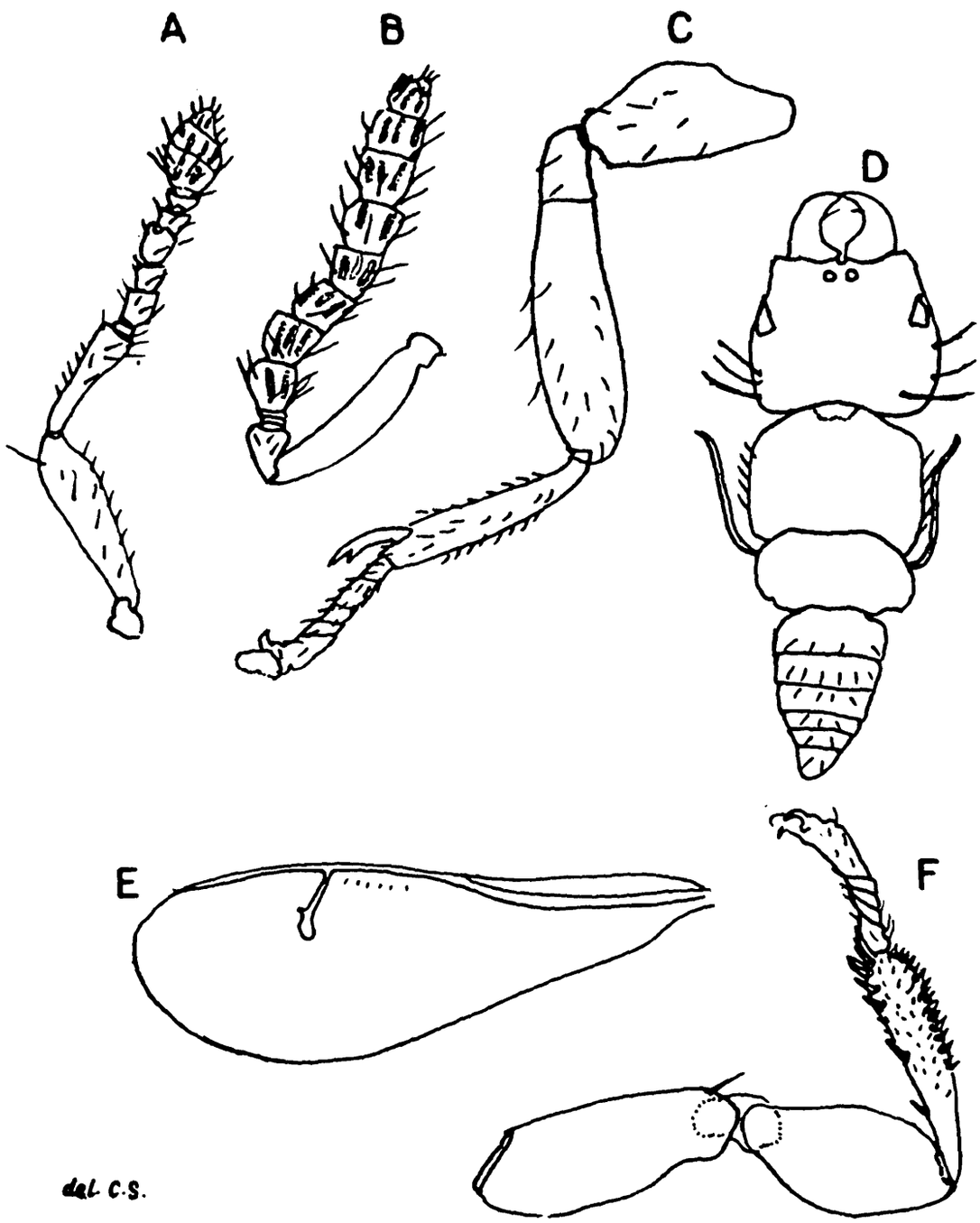

FIG. 24. *Sycoscapter triformis* Joseph : A. Antenna, male; B. Antenna, female; C. Fore leg, female; D. Head and thorax, male; E. Fore wing, female; F. Hind leg, female. *(Modified from* Joseph).

Male : Variable; Length 1.84-2.20 mm. Joseph has described 3 different forms of the male. Form 1 : body general ferruginous-brown-yellow; antennae with 11 segments : 1.1.1.5.3; scape about 4 times as long as second segment long, slender, 3.50 longer than thick; mandible falcate, 2.20 times longer than wide, unidentate

apically and tridentate on the inner margin below; maxillary palpus with 4 and labial palpus with 2 segments; pronotum wider than long; metanoto-propodeum 1.75 times as long as wide; fore wing filiform; fore coxa about 1.66 times as long as wide, subcompressed, with a distinct cuticular expansion along dorsal margin; femur subcompressed; tibia about 0.75 of femur, with numerous odontoid spines; tarsi about 0.75 of tibia; metatarsus about equal to the 3 following segments combined; hind coxa long, a little less than 2.33 as long as wide; metatarsus about 0.66 of the following 3 segments

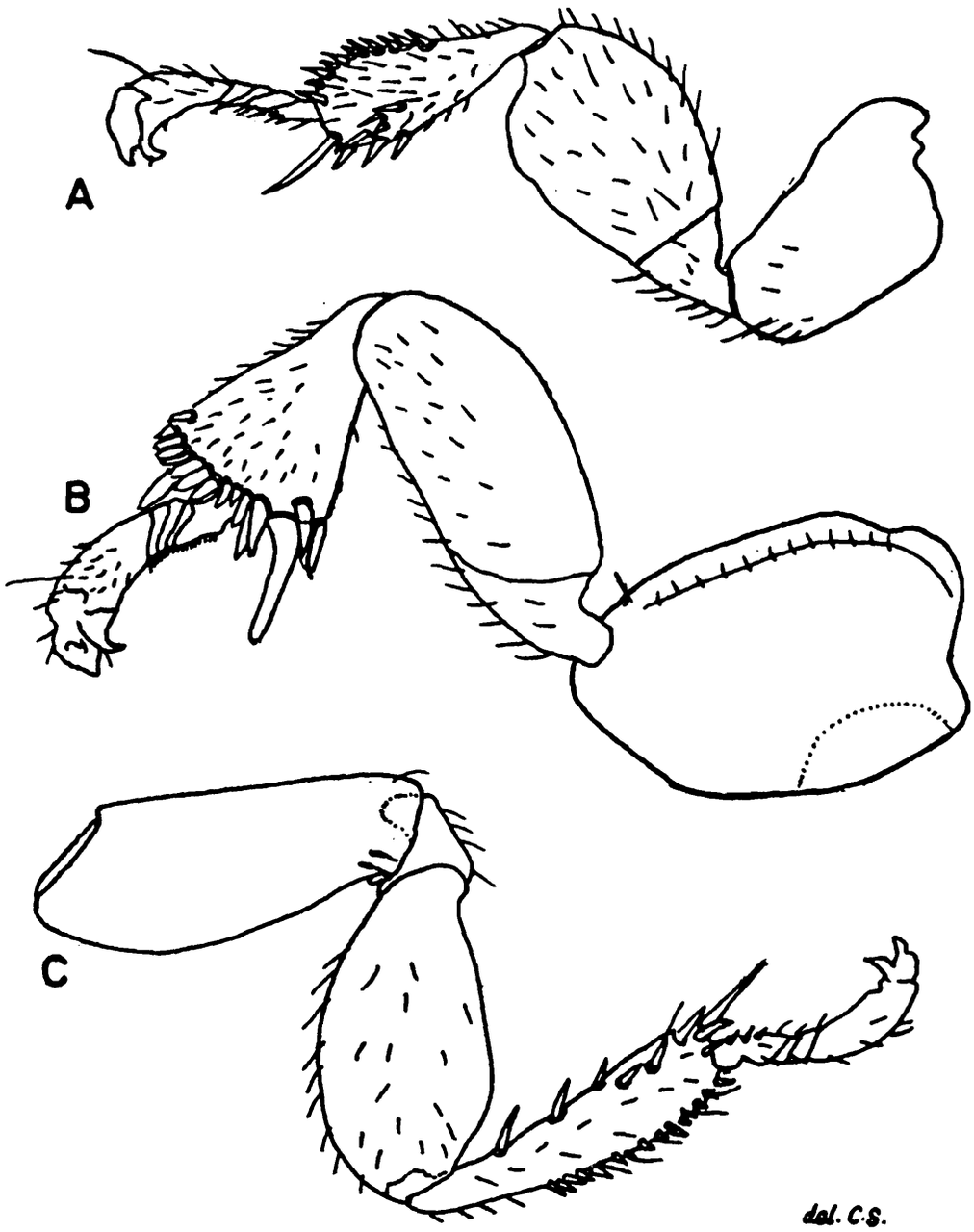

FIG. 25. *Sycoscapter trifromis* Joseph, male : A. Middle leg; B. Fore leg; C. Hind leg. *(Modified from* Joseph).

combined; abdomen over 1.50 times longer than wide; armature with dorsal appendages, with 3 odontoid spines; penis short, sublanceolate.

Type locality : Belgaum (Thalakvadi)

Host : Figs of *Ficus mysorensis* Hayne.

Sycoscapteridea Ashmead

1904 *Sycoscapteridea,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 239.
1909 *Sycoscapteridea,* Schmiedeknecht, *Gen. Ins.,* 97 : 96.
1953 *Neosycoecus* Joseph, *Agra Univ. J. Res. (Sci.)* 2 : 62.
1967 *Sycoscapteridea,* Wiebes, *Tijds. Ent.,* 11 : 424.

Male : Head with a triangular fovea, oblong, quadrate, sinuate behind; posterior angle not acute; mandible falcate, bidentate apically and with a basal tooth on the inner margin; antennae inserted on the front margin of head, with 8 or 9 segments; wings rudimentary, reduced to bristles; tarsi with 5 segments.

Type-species : Sycoscapteridea monilifera (Westwood)

Sycoscapteridea monilifera (Westwood)

(Fig. 26)

1883 *Sycoscapter monilifera,* Westwood, *Trans. ent. Soc. London,* 41.
1883 *Sycoscapter gracilipes,* Westwood, *Trans. ent. Soc. London,* 41.
1904 *Sycoscapteridea monilifera,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 239.
1909 *Sycoscapter gracilipes,* Schmiedeknecht, *Gen. Ins.,* 97 : 96.
1909 *Sycoscapteridea monilifera,* Schmiedeknecht, *Gen. Ins.,* 97 : 96.
1938 *Sycoscapter gracilipes,* Mani, *Cat. Indian Ins.,* 23 : 36.
1938 *Sycoscapteridea monilifera,* Mani, *Cat. Indian Ins.,* 23 : 36.
1967 *Sycoscapter gracilipes,* Wiebes, *Tijds. Ent.,* 11 : 424.
1967 *Sycoscapteridea monolifera,* Wiebes, *Tijds. Ent.* 11 : 424.

Female : Length 1.30 mm. Body yellowish-brown; abdomen banded dark brown above.

Head shorter than wide; eye longer than gena; epistomal margin faintly bilobed; toruli close to epistomal margin; antenna with 13 segments; 3 annelli; club 3 segmented; scape 2.50 times pedicel; sensilla of the funicular segments rather wide, in one regular whorl; labial palpi segments ratio 2 : 3; maxillary palpi segments ratio 5 : 6 : 5 : 12; mandible tridentate, with 2 glands.

Pronotum long; parapsidal furrows almost complete; scutellum finely reticulate, with 2 long posterior setae; propodeum long, with about 10 setae laterad of spiracular peritremata; fore wing length width ratio 16 : 6; veins *sm : m st : pm* ratio 12 : 7 : 2 : 6; *st* with 4 pustules; membrane, but for the proximal third, with microtrichae;

fringe of moderate length; fore femur as long as coxa and trochanter combined; tibia little shorter; coxa with antiaxial setae; tibia with 2 small spines in dorsal angle; several long spines visible in axial aspect, and a robust ventral spur; tarsal segments ratio 2 : 1 : 1 : 1 : 2; mid leg slender; tibia as long as femur and trochanter combined, with one spur; tarsal segments ratio 9 : 5 : 4 : 3 : 4; hind leg femur and tibia subequal, about as long as coxa and trochanter combined; tibial armature consisting of 2 unequal ventral spurs, 5 antiaxial spines in the ventral angle, 6 conical spines in the distal portion of the dorsal margin, and a row of slender spines along the axial apex; tarsal segments ratio 14 : 8 : 4 : 3 : 4.

Ninth urotergite more than 3 times apparent abdomen, with very small pygostyles near the apex.

Male Length 1.10 mm. Head slightly longer than wide, with rows of spine-like setae along the posterior 0.50 of the lateral margin; several long dorsal setae posteriorly; epistomal margin almost straight; eyes rather small; toruli close together, their distance from the epistomal margin about 0.50 of their longitudinal diameter; antenna with 11 segments; one very short annellus; club 3 segmented; scape little expanded, almost 2 times pedicel; segments 4 and 6 cyathiform, each with a sensillum; segments 5, 7 and 8 smaller; club large, segmentation indistinct; labial palpi 2 segmented; maxillary palpi segments ratio 3 : 3 : 1 : 2; mandible with a truncate subapical tooth; 2 glands.

Thorax with several long setae. Pronotum about as long as wide, narrowed in front; length of the combined mesonotum and metanotum 0.25 of the width; propodeum longer, with small subcircular spiracular peritremata. No wing remnants; fore coxa wide, as long as femur; tibia slender, with a robust ventral spur, one ventral spine, 2 apical spines visible in antiaxial aspect, 3 small dorsal spines, and several long setae along the ventral and dorsal margins; tarsal segments ratio 6 : 3 : 2 : 2 : 10; mid tibia with small spines along the dorsal margin, one spine at the antiaxial apex; one slender ventral spur, 2 spines in the ventral angle; several setae along the ventral margin; tarsal segments ratio 10 : 5 : 5 : 3 : 14; hind coxa nearly as long as femur and trochanter combined; tibia slightly longer than femur, with rather stout spines and setae along dorsal margin, a small spine at the antiaxial apex and a row of slender spines along axial apex, a long ventral spur, 2 spines in the ventral angle, 2 stout spines at 0.66 of the ventral margin, and several slender spines more proximally along the ventral margin; metatarsus expanded, tarsal segments 2-4 subequal, about 0.33 of metatarsus, apical segment 0.66 of metatarsus.

Abdomen subequal to thorax; genital claspers with 3 claws.

Wiebes remarks as follows : "*Sycoscapteridea monilifera* (Westwood) appears to be congeneric with the species described in

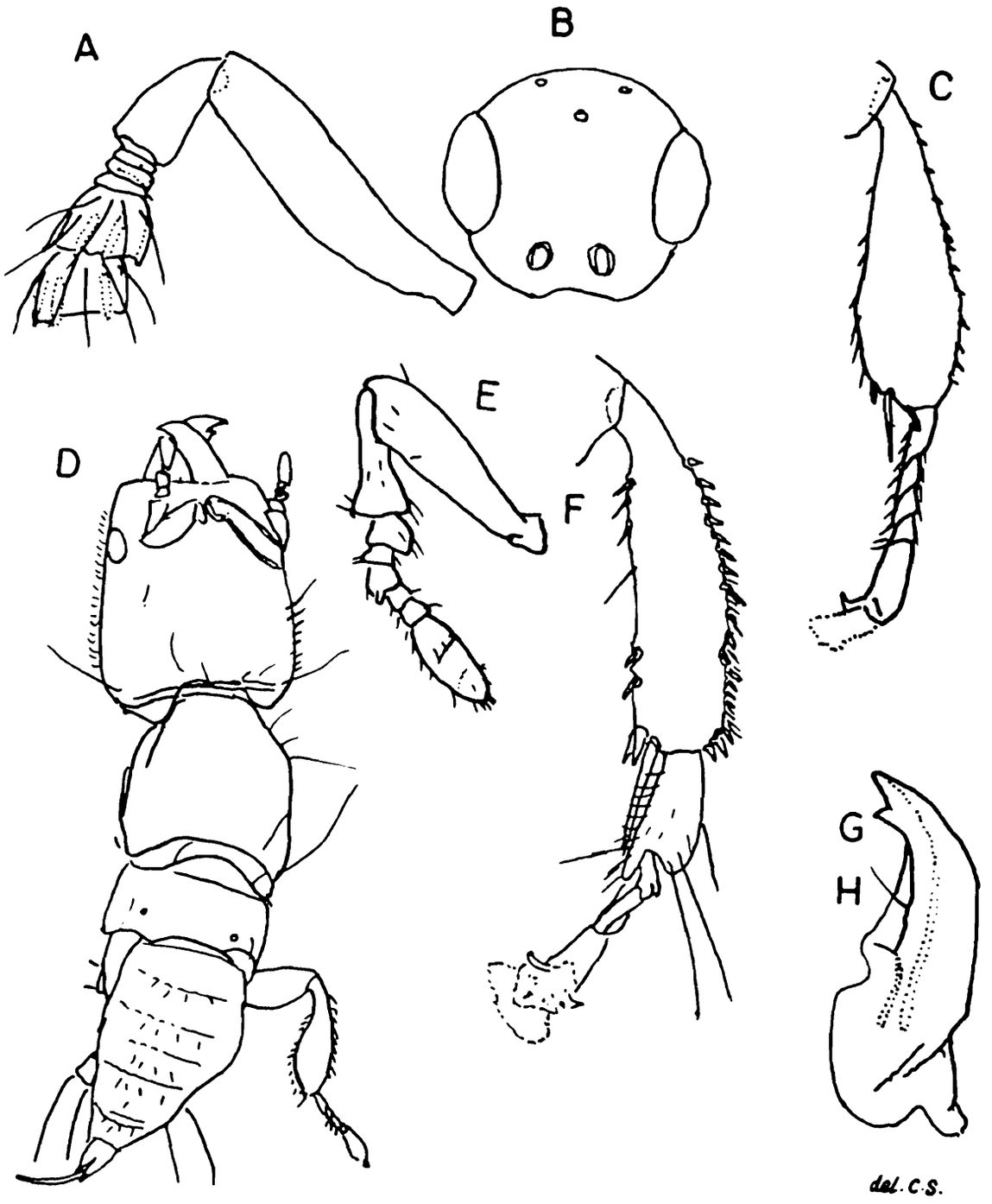

FIG. 26. *Sycoscapteridea monilifera* (Westwood) : A-B. Female : A. Antenna; B. Head in front view; C-G. Male : C. Middle tibia; D. Dorsal aspect of body; E. Antenna; F. Hind tibia and tarsus; G-H. Mandible.

this genus by Joseph (1957). An important generic character is to be found in the male thorax, in which one of the terga (presumably representing the metanotum) is situated between the mesonotum and the propodeum without reaching the lateral margins. The female has small pygostyles near the apex of the long ninth urotergite, as earlier described for *S. stilifera* Wiebes : a primitive character in the Sycoryctini. This feature, the long pronotum, the absence of long setae in the *st, sm* angle of the fore wing, and the rather short dorsal spines of the hind tarsi, would seem to be differential characters of the females of *Sycoscapteridea* Ashmead, 1904.

The females described by Joseph have only one annellus in the antenna, while both *S. monilifera* and *S. stilifera* have three. The female mandibles are described by Joseph as bidentate; *S. monilifera* and *S. stilifera* have 3 teeth."

Type locality : Ceylon : Taprobana

Distribution Ceylon

Host : Fig of *Ficus bengalensis* Linn.

Sycoscapteridea indica (Joseph)

(Fig. 27)

1953 *Neosycoecus indicus*, Joseph, *Agra Univ. J. Res.* (Sci.) 2 : 63.
1956 *Sycoscapteridea indica*, Joseph, *Ann. Soc. Ent. France*, 125 : 115.

Female Length 1.40 mm. Body generally metallic-green, with golden reflections; scape below yellowish-brown; rest of antennae and ovipositor smoky-brown; legs honey-yellow; eyes red; wings hyaline.

Head wider than long; epistome with paired sublateral concavities and median convex process; longitudinal groove shallow; margin in front of eyes about 0.71 of eye; ocellar triangle obtuse; posteromedian margin slightly concave in the middle and rounded behind eyes; vertex obscurely rugose; scape about 4 times as long as thick; pedicel about 1.75 times as long as thick; annellus minute; first funicular segment as long as thick; second a little longer, third subequal to the second; fourth segment distinctly thicker than long; fifth segment subequal to the fourth but thicker; club triarticulate, about 2 times as long as thick; maxillary palpal segments ratio 4 : 6 : 2 : 5; labial palpal segments subequal.

Thorax finely reticulate; pronotum about 0.20 as long as wide, narrowed in front, sinuate in the middle in front; parapsidal furrows indicated only in the anterior 0.50; scutellum rugulose, wider than long, overlaps metanotum; fore wings about 2.60 times as long as wide; vein *sm* less than 2 times *m;* vein *pm* longer than *m;* vein *st* a little longer than 0.50 of *pm;* hind wing almost 6 times as long as wide; fore coxae a little more than 2 times as long as thick; femora about 3.50 times as long as thick; tibiae shorter than femora, about 6 times as long as thick; with about 3 odontoid spines and long forked spur; fore tarsi with 5 segments, short, armed with spines; metatarsus a little shorter than the 2 following segments combined and with a pectinate series of about 8 spines; middle coxae a little longer than wide; femora 4 times as long as thick; tibiae longer than femora, spur short, with many spines; tarsi with 5 segments, with spines; metatarsus subequal to the 2 following segments combined; hind coxae 3 times as long as wide; femora 3.66 times as long as wide,

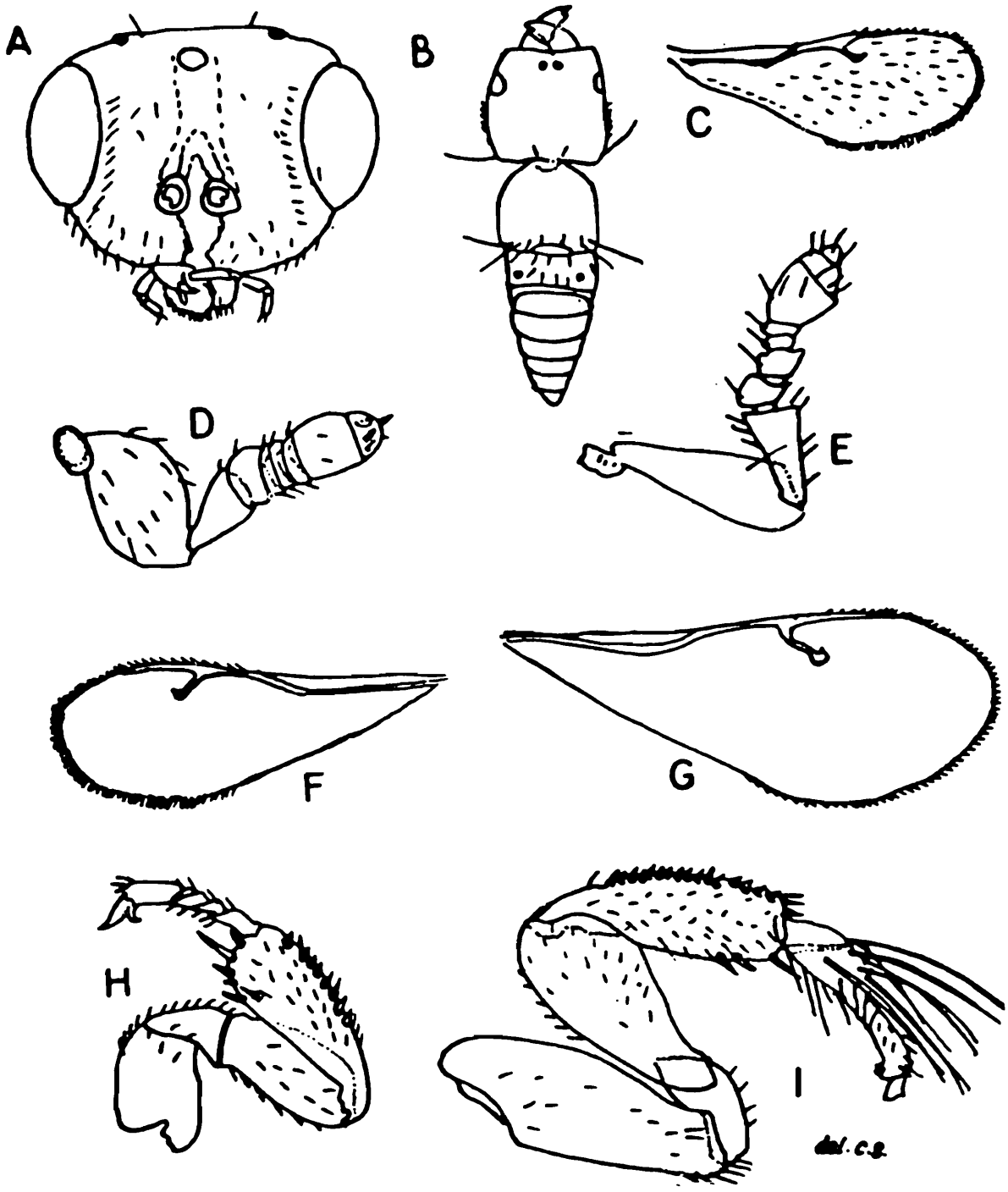

FIG. 27. A-E. *Sycoscapteridea indica* (Joseph) : A. Head; B. Dorsal aspect of body; C. Fore wing; D. Antenna; E. Antenna; F. *Sycoscapteridea longipalpus* (Joseph) : Fore wing; G-I. *Sycoscapteridea forsteni* Joseph : G. Fore wing; H. Middle leg; I. Hind leg. *(Modified from* Joseph).

elongate-oval; tibiae longer than femora, subclavate, with many spines and 9 or more odontoid spines in the apical 0.50 and paired unequal spurs; tarsi with 5 segments; metatarsus longer than the 2 following segments combined; propodeum about 7 times as wide as long, divided into median and lateral parts; abdomen about 2.25 times as long as wide; ovipositor 3 times abdomen.

Type locality Agra

Host From figs of *Ficus infectoria* Roxb.

Sycoscapteridea longipalpus (Joseph)

(Fig. 27)

1953 *Neosycoecus longipalpus,* Joseph, *Agra Univ. J. Res.* (Sci.) 2 : 69.
1956 *Sycoscapteridea longipalpus,* Joseph, *Ann. Soc. Ent. France* 125 : 119.

Female : Length 1.80 mm. Body metallic-green or blue with golden reflections; legs and head below, scape pale brownish-yellow; rest of antennae smoky-brown; wings hyaline; ovipositor dark brown.

Head wider than long; epistome with large paired sublateral concavities and convex median projection; margin in front of eye a little less than 0.50 of eye; posterolateral margin rounded behind eyes; posteromedian margin weakly concave; ocellar triangle obtuse; groove shallow; rugulose; antennae with 11 segments; scape a little less than 4.50 times as long as wide; pedicel a little less than 1.50 times as long as thick; first funicular segment a little longer than thick; segments 2-5 subequal; club a little less than 3 times as long as thick; mandible subtriangular, a little less than 1.50 times as long as wide, bidentate, apical tooth long and acute, subapical tooth obtuse; maxillary palpus with 4 segments in the ratio 4 : 7.5 : 5 : 9; labial palpus segments 2, subequal.

Pronotum a little less than 3 times as wide as long, narrowed in front; mesonotum reticulate; parapsidal furrows indicated only in the anterior 0.50; scutellum finely rugulose, as long as wide, posteriorly overlapping metanotum; fore wings about 2.50 times as long as wide; costal cell 10 times as long as wide; vein *sm* about 2 times *m; pm* a little longer than *m; st* about 0.50 of *pm;* hind wing 4.50 times as long as wide. Fore coxae about 2 times as long as thick; femora a little more than 4 times as long as thick; tibiae subclavate, shorter than femora, and 6 times as long as thick; with setae and 2 odontoid spines and long bifid spur apically; tarsi with 5 segments; metatarsus about equal to the following 2 segments combined; with a pectinate series of 9 setae; middle coxae slightly longer than wide; femora 4 times as long as thick; tibia about 9 times as long as thick, subclavate, large spur; tarsus with 5 segments; metatarsus longer than the following 2 segments combined; hind coxae 2.66 times as long as thick; femora elongate-oval, about 3.16 times as long as wide; tibiae subclavate, 6.50 times as long as thick, with 10 odontoid spines and unequal paired spurs apically; tarsi with 5 segments; metatarsus about 0.50 of tarsus. Propodeum 6 times as wide as long, with median and lateral parts differentiated.

Abdomen 2 times as long as wide; tergite 8 with paired spiracles, peritremes subcircular; ovipositor about 4 times abdomen, swollen at tip.

Type locality : Vazhapara Beat (Pathanapuram) Travancore
Host : From figs of *Ficus asperrima* Roxb.

Sycoscapteridea forsteni Joseph

(Fig. 27)

1956 *Sycoscapteridea forsteni,* Joseph, *Ann. Soc. Ent. France,* 125 : 115.

Female Length 1.60 mm. Body metallic-blue and green; antennae smoky-brown; legs melleous; head 1.25 times as wide as long; margin in front of eyes about 0.50 eye; scape 4.50 times as long as wide; pedicel a little less than 1.50 times as long as thick; parapsidal furrows incomplete; scutellum a little wider than long; fore wing over 2.50 times longer than wide; vein *sm* a little less than 2 times *m; pm* longer than *m* and about 2 times *st;* fore coxa 2.25 times as long as wide; femur 3.25 times longer than wide; tibia shorter, with 4 odontoid spines; metatarsus a little less than 0.50 of tarsus; hind coxa less than 2.50 times as long as wide; femur 3.33 times as long as wide; tibia much longer than femur, with 13 small odontoid spines; metatarsus hardly 0.50 of tarsus; ovipositor 3.33 times abdomen.

Male Length 1 74 mm. Body generally yellowish-brown; abdomen paler; head about 1.20 times longer than wide; scape compressed, a little over 2.50 times longer than wide; pedicel about 1 75 times longer than thick; fourth segment with a long, projecting inner margin; sixth segment with a long projecting outer margin; segments 9-11 fused together to form club, about 2.50 times as long as thick; pronotum hardly wider than long; wings absent; fore coxa 1.33 times longer than wide; femur about 1.25 times longer than wide; tibia shorter than femur, 2.75 times longer than wide, with 4 odontoid spines; metatarsus 0.40 of tarsus and subequal to the following 2 segments combined; hind coxa 2.50 times longer than wide; femur about 2.16 times as long as wide; tibia a little longer, 3 times longer than wide, compressed, with numerous odontoid spines; metatarsus about 0.60 of tarsus; abdomen 1.33 as long as thick; genital armature with 2 ventral appendages bearing a long and a short seta each and the 2 dorsal appendages with 4 short teeth each; penis exserted, long, sublanceolate.

Type locality : Dehra Dun

Host : Figs of *Ficus palmata* Forsk.

Sycoscapteridea raoi Joseph

(Fig. 28)

1956 *Sycoscapteridea raoi,* Joseph, *Ann. Soc. Ent. France,* 125 : 117.

Female Length 1.58 mm. Body iridescent green-blue reflections on brown; head 1.33 as long as wide; margin in front of eyes about 0.50 of eye; scape slightly less than 4 times as long

as thick; pedicel a little more than 1.50 times longer than thick; parapsidal furrows incomplete; scutellum as long as wide; fore wing a little over 2.50 times longer than wide; vein *sm* hardly longer than *m; pm* longer than *m* and a little less than 2 times *st;* fore metatarsus about 0.20 of tarsus; hind coxa about 2.50 times as long as wide; femur 1.33 times as long as wide; tibia 1.25 femur, with about 9 odontoid spines; tarsus shorter than tibia; metatarsus 0.50 of tarsus; ovipositor over 3.50 times abdomen.

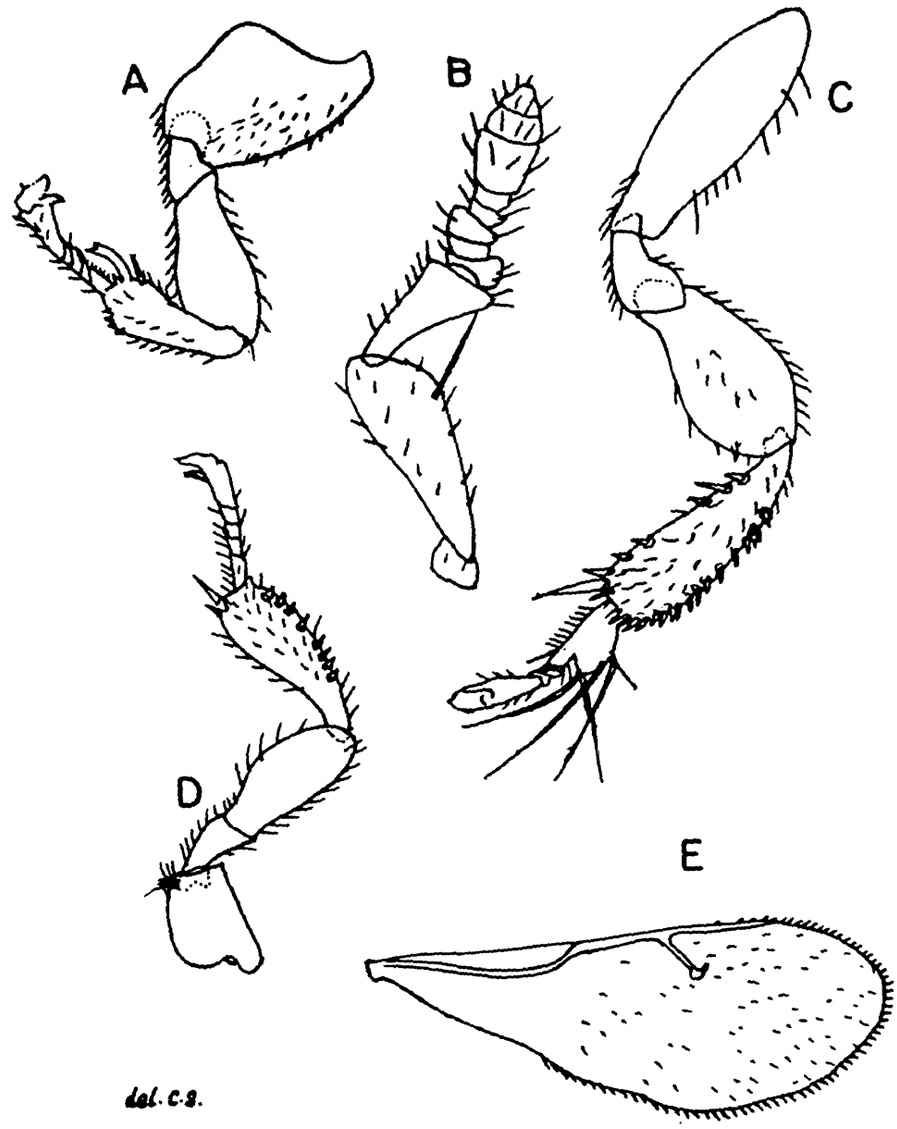

FIG. 28. *Sycoscapteridea raoi* Joseph : A-D. Male : A. Fore leg; B. Antenna; C. Hind leg; D. Middle leg; E. Female, fore wing. *(Modified from* Joseph).

Male Length 1.76 mm. Body ferruginous-brown; head 1.20 times longer than wide; scape a little less than 3 times as long as wide; pedicel less than 2 times as long as thick; segments 9-11 fused to form club 2 times longer than thick; pronotum wider than long; wings absent; fore coxa 0.70 as long as wide; femur 2.25 times longer than wide, shorter than coxa; tibia with about 5 odontoid spines; metatarsus less than 0.50 of tarsus; hind coxa long, 3 times longer than wide; femur 2,25 times longer than wide; tibia longer than femur; with numerous odontoid spines; metatarsus 0.50 of tarsus.

Type locality : Agra.

Host Figs of *Ficus carica* Linn.

Philotrypesis Förster

1878 *Philotrypesis,* Förster, *Verh. Nat. Ver. Preuss. Rheinl.,* 35 : 59.
1883 *Sycoscaptella,* Westwood, *Trans. Ent. Soc. London,* 36, 43.
1883 *Idarnella,* Westwood, *Trans. Ent. Soc. London,* 37.
1904 *Philotrypesis,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 237.
1904 *Tetranemopteryx,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 239.
1904 *Sycoscaptella,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 237, 240.
1909 *Philotrypesis,* Schmiedeknecht, *Gen. Ins.,* 97 : 90.
1909 *Sycoscaptella,* Schmiedeknecht, *Gen. Ins.,* 97 : 90.
1921 *Philotrypesis,* Silvestri, *Boll. Lab. Zool. Portici,* 15 : 103.
1930 *Philotrypesis,* Grandi, *Boll. Lab. Ent. Bologna,* 8 : 38-45.
1938 *Tetranenopteryx,* Mani, *Cat. Indian Ins.,* 23 : 35.

Female : Head as wide as thorax; eyes remote from mandible base; antennae with 13 segments including 3 annelli; scape hardly 3 times pedicel; funicular segments subequal; not longer than thick, club with 3 segments; pronotum equal to mesonotum; parapsidal furrows distinct; scutellum very large; wings sparsely hairy; vein *m* more than 2 times *pm; pm* 2 times *st;* tarsi with 5 segments; the last 2 tergites elongate; seventh tergite longer than the preceding tergites combined; ovipositor long.

Male : With wings reduced to filaments; head in front with a deep triangular groove for antenna; between the antennae with an acute carina; hind metatarsus expanded.

Type-species : Philotrypesis caricae Förster

Grandi described in 1930 the interesting polymorphism in the genus *Philotrypesis* characterized by remarkable differences like : (1) *Variable size and shape.* In males of the same species a considerable variation in size, ranging from giant forms through medium-sized ones to dwarfs, which are respectively the *eumegetic, epimegetic* and *hypomegetic.* In giant forms head distinctly wider than long, transverse and massive; in medium-sized individuals head may be about as wide as long; in the pigmy-sized ones longer than

wide and rounded at their anterior angles, thus assuming a somewhat rounded outline. (2) *The degree of reduction undergone by the wings :* Wings, though reduced, are in the majority of forms, long and slender; fore wing being a little longer than the hind wings; this is the *leptopterous* condition; reduction in length of wings but not in width is seen in a few cases, the *brachipterous* condition, fore wing is the first to undergo conspicuous reduction in length; in *P. quadrisetosa* (Westwood) form 2, it is short and stumpy but retains its normal width; (3) *Reduction in number and size of macrochetae, setae and odontoid spines :* With the reduction in size of the individuals, there is a corresponding diminution in the number and size of the macrochetae, setae and odontoid spines borne on the different parts of the body.

Silvestri (1921) gives a detailed account of this genus.

Female : Head hypognathous, a little wider than long; eyes glabrous, well developed; ocelli 3; antennae inserted above the level of lower orbital border, with 13 segments; scape about 2.25 times pedicel, longer than wide;segments 3-5 minute, annelliform; terminal 3 segments united to form club; labrum membranous; mandible small, slightly longer than wide, bidentate; maxillary palpi with 4 and labial palpi with 2 segments; pronotum well developed, hind angles projecting beyond mesonotum; mesonotum robust; scutellum wide, subpentagonal, rounded behind; propodeum with spiracular epitreme rounded; fore wing 2 times longer than wide; vein *sm* somewhat shorter than *m* and *pm* combined; *m* longer than *pm; st* shorter than *pm;* hind wing 4 times longer than wide; tarsi with 5 segments; abdomen shortly petiolate; urotergites 3-7 normally developed; eighth is rather long, distally attenuate, with paired spiracles basally; ninth long, abruptly narrowed apically with 2 short subdistal cercoids; tenth subrudimentary, glabrous sublanceolate.

Male homeomorph : Macropterous, with head, thorax and appendages as in female; abdomen as in heteromorph male; cercoid on ninth urotergite without long setaes.

Male heteromorph : Head horizontal, orthognathous, longer than wide or wider than long, subquadrate, above with an anterior median subtriangular depression with a median carina from the epistomal margin; eyes small, oval, dorsal or sublateral or anterior; antennae in the depression with radicle and 9 free segments, of which the last composite of 3; scape large, stout, subclavate; pedicel subcylindrical; third segment minute, as wide as long; segments 4-8 normally developed; 5 with long sensillae; clypeus fused with frons; mandible variable, bi-or tridentate; homodont or heterodont; maxillary palpi with 4 and labial palpi with 2 segments, pronotum large, flat; mesonotum, metanotum and propodeum rigidly fused together; wings variable; reduced or atrophied or long; legs well developed; tibiae with odontoid spines on margins; fore tibiae with

a characteristic long laminate expansion; tarsi variable; metatarsus, second or third segments often modified; abdomen shortly petiolate; 8 urotergite with spiracle; 9 with short cercoid, 10 usually concealed in 9; with 2 distal ventral digitiform processes and 2 gonopophyses; penes short, sublanceolate, with proximal bacilliform processes.

In the present state of our knowledge it is not possible to construct a workable key to the Indian species of *Philotrypesis.*

Philotrypesis transiens (Walker)

(Fig. 29)

1871 *Idarnes transiens,* Walker, *Notes Chalc.,* 4 : 62.
1875 *Polanisa lutea,* Walker, *Entomologist,* 8 : 18.
1883 *Idarnella transiens,* Westwood, *Trans. ent. Soc. London,* 37.
1909 *Polanisa transiens,* Schmiedeknecht, *Gen. Ins.,* 97 : 241.
1921 *Philotrypesis transiens,* Grandi, *Boll. Lab. Zool. Gen. Agr. Portici,* 15 : 184.
1938 *Polanisa transiens,* Mani, *Cat. Indian Ins.,* 23 : 32.
1967 *Philotrypesis transiens,* Wiebes, *Tijds. ent.,* 110 : 413, 414, 417.

The species is distinguished by "a rather large head, long slender antennae in both sexes, basal segment being long and not clavate, second segment about 0.25 of the length of the preceding, third small and annular, fourth following equal sized, each rather longer than the second, ninth, tenth and eleventh forming a long articulated mass, pointed at tip; prothorax is rather small and conical; fore wings have an elongated deflexed vein; abdomen of male is armed with 2, 3 dentate retinacula, whilst that of female is terminated by a long slender cylindrical segment as long as whole of preceding portion of abdomen, and this is succeeded by another still more slender cylindrical segment, from the extremity of which arise the 2 sheaths of very elongate ovipositor (thickened at their extremities), ovipositor itself being extremely slender and hair-like.

The following characters of *Idarnes,* as described by Walker, seem sufficient to separate this insect generically from the type of genus, *I. carme* (for the former of which I propose the name of *Idarnella).* Antennae are ciarate, 10 segmented, the first and second segments long and slender, third and following short and transverse; prothorax elongate-conical; abdomen lanceolate, a little longer than thorax; oviduct setose, much more than 2 times the length of the body, tubiform, and like the body in colour towards the base; sheaths black, and with the usual structure from thence to tip, tubiform part as long as abdomen; legs short, stout, coxae long; fore femora incrassated, 4 posterior femora slightly incrassated; tibiae with 2 apical spines."

In 1871 Walker described *Idarnes transiens* from figs of *Ficus indica* (=*F. bengalensis* L.) India, and Sri Lanka. Westwood (1883)

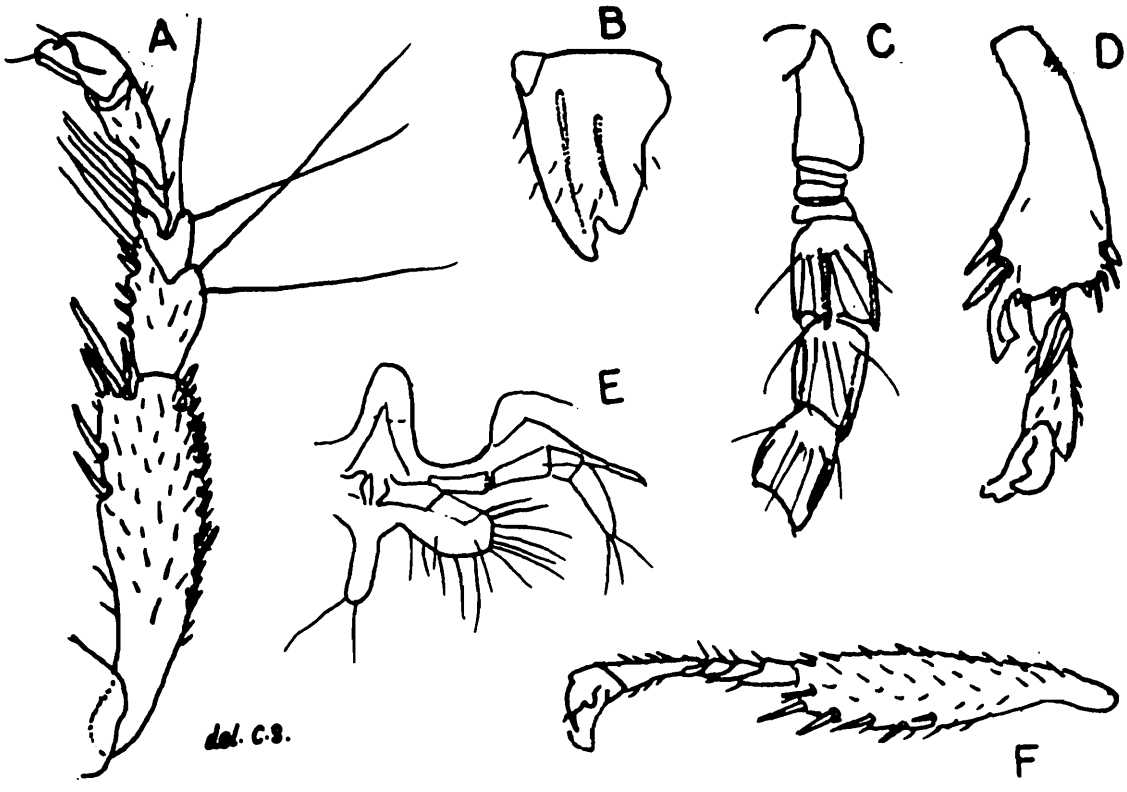

FIG. 29. *Philotrypesis transiens* (Walker) : A. Hind tibia and tarsus, male; B. Mandible, female; C. Antenna, scape and proximal segments of funicle, female; D. Fore tibia and tarsus, male; E. Mouth parts, male; F. Middle tibia and tarsus, male.

gave a short description and erected the genus *Idarnella* for its reception. PATTON (1884) synonymized *Idarnes transiens* and *Polanisa lutea* Walker, 1875, and listed the species as *Polanisa transiens* (Walker), ASHMEAD (1904), by synonymizing *Idarnella* Westwood and *Philotrypesis* Förster and subsequent authors consistently used the name *Philotrypesis.* It was recently suggested to let the name *Polanisa* Walker remain a nomen dubium for the time being described a female and a subapterous male from Pusa (Bihar, India), which he considered to represent *Philotrypesis transiens* (Walker). *Sycoscaptella affinis* Westwood, 1883, was described from one apterous male from *Ficus indica,* collected in Calcutta. ASHMEAD (1904) and SCHMIEDEKNECHT (1909) made mention of the female : it evidently is close to *Philotrypesis.*

Heteromorphous males : Two forms of subapterous males can be distinguished, as *Philotrypesis transiens* (Walker), or to *P. affinis* (Westwood). In addition to the differences mentioned by Joseph, males may be distinguished by the spines of the legs; fore tibia bears long ventro-apical spines in *P. transiens;* these spines are stout and cone-like in *P. affinis;* mid and hind tibiae with long ventral spines in *P. transiens;* in *P. affinis* more, smaller spines, also on the antiaxial discs. There seems to be some difference in the presence of long setae on all tibiae in *P. affinis;* hind metatarsus of *P. affinis* is more compressed, and bears a smaller number of ventral spines, than in *P. transiens.*

The 2 forms differ in size; smaller males, mostly with head slightly tranverse or as long as wide, belong to *P. affinis;* larger males (head in most examples oblong), to *P. transiens.*

Females fall into 2 groups; one representing *Philotrypesis affinis* (Westwood), other identical with *P. transiens* (Walker). In *P. transiens,* the eighth urotergite is longer than abdomen, or equal in all specimens but one, of *P. affinis* it is distinctly shorter; proportions of the eighth and ninth urotergites vary with size; in *P. transiens* the eighth urotergite is more nearly 2 times, or over 2 times as long as the ninth, while in all specimens of *P. affinis* this ratio is less than 2; dorsum of thorax faintly curved in *P. affinis,* while *P. transiens* is distinctly hump-backed; in contrast to *P. affinis,* most antennal setae of *P. transiens* are inserted in the basal portion of the segments; the second tooth of the mandible of *P. affinis* is more distinctly truncate than that of *P. transiens;* maxillary palpi more slender than *P. affinis.*

Type locality Ceylon

Distribution Ceylon, India

Host Fig of *Ficus bengalensis* Linn.

Philotrypesis affinis (Westwood)

(Fig. 30)

1883 *Sycoscaptella affinis,* Westwood, *Trans. ent. Soc. London,* 36, pl. 6.
1909 *Sycoscaptella affinis,* Schmiedeknecht, *Gen. Ins.,* 97 : 91.
1938 *Sycoscaptella affinis,* Mani, *Cat. Indian Ins.,* 23 : 33.
1954 *Philotrypesis travancoricus,* Joseph, *Agra Univ. J. Res.,* (Sci.) 3 : 83.
1967 *Philotrypesis affinis,* Wiebes, *Tijds. Ent.,* 110 : 401, 409.

Male, Form 1 Length 1.60 mm. Head yellowish-brown; thorax and abdomen pale yellowish-brown; mandibles pale brownish-red; scape yellowish-brown, rest of antenna whitish-yellow; legs pale yellowish-brown, with trochanters and tibiae rusty yellowish-brown; eyes black.

Head hardly a little wider than long; epistomal margin emarginate in the middle; lateral margins of head weakly converging forwards; posterior margin of head concave; frontal region posterior to the anterior depression without rugosities; head with numerous long macrochetae; eyes small; toruli almost contiguous; antenna with 11 segments; scape about 2 times as long as thick, about 3.50 times second segment, with setae and 2 long macrochetae; second segment 2 times as long as thick, with setae distally; third very small, thicker than long; fourth a little longer than thick; fifth a little longer than fourth, as long as thick; segments 6-11 thicker than long; segments 9-11 fused to club 1.50 times its thickness; mandible 2 times as long

as wide, apical tooth long and acute, subapical portion with a tendency to be bidentate; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum hardly a little less wide than head : length about 0.80 of width, with a few small setae and many long macrochetae laterally, anteriorly and posteriorly; lateral margins weakly converging backwards; rest of thorax and propodeum equal to 0.60 of width; mesonotum with many long and short macrochetae; propodeal tracheal spiracles with small rounded peritremes; wings long and narrow; fore wing about 1.50 times the hind wing; fore coxa less than 2 times as long as wide, obliquely weakly rugose; femur about 2 times as long as wide, with setae and a single macrocheta on its dorsal margin; tibia distinctly shorter than femur, 2 times as long as wide, with setae, odontoid spines, a bifid spur and two long macrochetae; tarsi longer than 0.50 of tibia; fifth segment 0.66 of tarsus; middle coxa about 1.40 times as long as wide, obliquely weakly rugose; trochanter a little less than 2 times as long as wide; femur 1.66 times as long as wide, tibia a little longer than the femur, length equal to 3 times width, with setae, odontoid spines, spur and two long macrochetae; tarsi about 0.50 times as long as the tibia; fifth segment 0.66 of tarsus; hind coxa a little longer than 1.50 times width, obliquely weakly rugose, with 2 macrochetae on its outer face; femur 2 times as long as wide, with setae; tibia longer than femur, 4 times as long as wide, with setae, odontoid spines, spurs and macrochetae; tarsi a little over 0.50 tibia; metatarsus 0.60 of tarsus, 1.66 times as long as width, dorsal projecting margin with 2 long macrochetae; second segment small, its dorsal projecting margin with 2 long macrochetae; fifth segment equal to metatarsus.

Abdomen about 1.50 times as long as wide; each of the urotergites with a row of long setae; eighth urotergite a pair of spiracles with small rounded peritremes; genital armature with a pair of ventral, flattened processes each with a long seta apically and a minute seta a little to the front, and 2 dorsal, long, depressed, distally dilated appendages each bearing 3 short, stout odontoid spines.

Male, Form 2 : Length 1.40 mm. A more brownish form than the preceding. Head hardly a little wider than long; lateral margins converging forwards; posterior margin concave; frontal region posterior to the anterior depression without semi-circular rugosities; dorsum with a few small setae, its lateral and posterior regions with macrochetae; toruli almost contiguous; antenna with 11 segments; scape about 2 times as long as thick and about 3.50 times as long as second segment, with 2 macrochetae; second segment a little less than 2 times its thickness; third small, thicker than long; segments 4-11 thicker than long, increasing in thickness distalwards; segments 9-11 fused to club a little over 1.50 times its maximum thickness; mandible a little over 1.50 times as long as wide; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum a little wider than head; pronotum 0.75 as long as wide, without conspicuous macrochetae; lateral margins weakly converging backwards; rest of thorax and propodeum a little over 0.50 of its maximum width, without macrochetae; wings small and reduced; fore wing 1.50 times hind wing; fore coxa over 1.50 times as long as wide, obliquely weakly rugose; femur 2 times as long as wide, with a few small setae; tibia 2 times as long as wide, with setae, odontoid spines, a bifid spur and 2 macrochetae; tarsi a little less than 0.50 of tibia; fifth segment about 0.66 of tarsus; middle coxa a little longer than wide, obliquely weakly rugose, with 2 macrochetae on its outer face; femur 2 times its width; tibia a little longer than femur, length 3 times its width, with setae, odontoid spines, spur and a macrochetae; tarsi a little longer than 0.50 of tibia; fifth segment 0.66 of tarsus; hind coxa about 1.50 times as long as wide, obliquely weakly rugose; femur about 1.66 times as long as wide, obliquely weakly rugose; tibia distinctly longer than femur, 3.50 times as long as wide, with setae, odontoid spines, spurs and a macroceta; tarsi longer than 0.50 of tibia; metatarsus 0.66 of tarsus, with 2 long macrochetae on its dorsal projecting margin; second segment small, with 2 macrochetae on its dorsal margin; fifth segment about 0.75 of metatarsus.

Abdomen a little less than 1.33 times as long as wide; urotergites without setae; eighth urotergite with a pair of spiracles with small rounded peritremes; genital armature with a pair of ventral, flattened processes each with a single long seta apically and a microscopic seta a little to the front, and 2 dorsal, long, depressed, distally dilated appendages each with 3 short, stout odontoid spines.

Male, Form 3 Length 1.40 mm. Somewhat more brown than form 2.

Head a little wider than long; lateral margins of head converging forwards; posterior margin concave; frontal region posterior to the anterior depression without semicircular rugosities; dorsum with small microscopic setae; toruli almost contiguous; antenna with 11 segments; scape about 2 times as long as thick, 3 times as long as the second segment; segment 2 a little less than 2 times as long as thick; third small and reduced, thicker than long; segments 4-8 thicker than long; seventh and eighth equal; segments 9-11 fused to club, 1.50 times its thickness; mandible 1.66 times width; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum as wide as head; pronotum a little over 0.75 of width; lateral margin weakly converging backwards; rest of thorax and propodeum over 0.50 of width; mesonotum wider than propodeum; wings small and reduced; fore wing a little longer than the hind wing; fore coxa about 2 times as long as wide, obliquely weakly rugose; femur a little less than 2 times as long as wide; length of tibia 2 times its width; tarsi over 0.50 of the tibia; fifth segment 0.66 of tarsus;

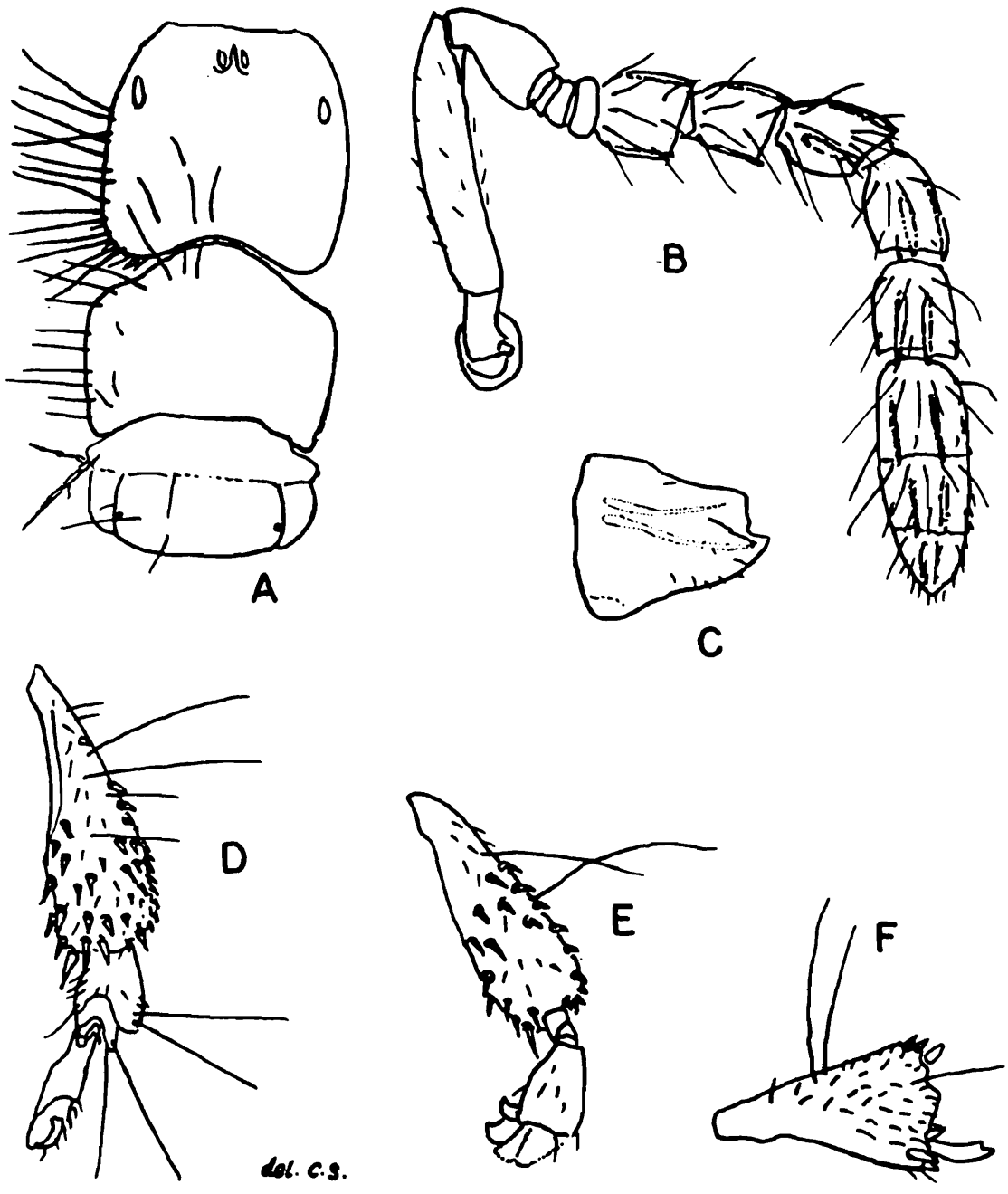

FIG. 30. *Philotrypesis affinis* (Westwood) : A. Head and thorax, male; B. Antenna, female; C. Mandible, female; D. Hind tibia and tarsus, male; E. Middle tibia and tarsus, male; F. Fore tibia, male.

middle coxa 1.33 times as long as wide, obliquely weakly rugose; femur about 1.50 times width; tibia less than 3 times as long as wide, with setae, odontoid spines and spurs; tarsi a little over 0.50 of tibia; fifth segment about 0.66 of tarsus; hind coxa 1.25 times as long as wide, obliquely weakly rugose, with 2 macrochetae on its outer face; femur 1.50 times as long as wide; tibia 3.25 times longer than wide, with setae, odontoid spines and tibial spurs; tarsi distinctly longer than 0.50 of tibia; metatarsus about 0.60 of tarsi and with 2 long macrochetae on its dorsal projecting margin; second segment small, with 2 shorter macrochetae on its dorsal margin, fifth segment shorter than metatarsus.

Abdomen a little over 1.33 times as long as wide; eighth urotergite with a pair of tracheal spiracles with small rounded peritremes; genital armature with a pair of ventral, flattened processes, each of which bears a long seta apically, and 2 dorsal, long, compressed, distally dilated processes, each with 3 short, stout odontoid spines penis exserted, sublanceolate.

Type locality : Calcutta

Distribution India

Host : Fig of *Ficus bengalensis* Linn.

Philotrypesis anguliceps (Westwood)

(Fig. 31)

1883 *Sycoscapter anguliceps,* Westwood, *Trans. ent. Soc.* London, 42.
1904 *Sycoscapterella anguliceps,* Ashmead, *Mem. Carnegie, Mus.,* 1(4) : 239.
1909 *Sycoscapterella anguliceps,* Schmiedeknecht, *Gen. Ins.,* 97 : 96.
1938 *Sycoscapterella anguliceps,* Mani, *Cat. Indian Ins.,* 23 : 36.
1967 *Philotrypesis anguliceps,* Wiebes, *Tijds. Ent.,* 11 : 401, 431.

"Mas. Minuta, luteo-fulva; capite oblongo-quadrato, lateribus parallelis setis tribus longis instructis, margine antico fere recto angulis anticis rotundatis, posticis in angulum parvum extus porrectum productis; oculis versus angulos anticos positis; antennis parvis, basi in medio clypei approximatis; articulo lmo elongato apice incrassato, 2ndo ovali (annulis sequentibus haud detectis) articulis 5 proximis parvis 2ndo minoribus, ultimo (8vo) ovali integro; mandibulis parvis falcatis apice acutis intergris, maxillis labio et palpis, ut videtur, obsoletis; thorace oblong, aptero, prothorace magno, meso et meta-thorace majori, abdomine postice attenuato, genitalibus retinaculis 2us angustis curvatis armatis; pedibus mediocribus, tarsis 5-articulatis, pedum 4 anticorum articulis simplicibus, tribus basalibus, in anticis brevissimis, in intermediis brevibus, 5to longitudine pracedentibus simul sumptis aequali, unguibus crassis basi dilatatis; tibiis pedum posticorum calcari longo apicali tarsisque difformibus et ut videtur 5-articulatis, articulo lmo oblongo subtus serie duplici spinarum parvarum, setaque longissima apicali armato, articulo 2ndo parvo sub apicem pracedentis abscondito, 3tio minuto, 4to brevi setis circiter 4 longissimis apicalibus instructo, articulo ultimo crasso oblongo ovato, unguibus basi dilatatis pulvilloque ordinario armatis. Long. circ. 2 mm"

Male (apterous) : Length 1.30 mm. Body yellowish-brown.

Head 1.50 times as long as wide, posterior angles produced; with dorsal and lateral setae; toruli wide apart, in common excavation close to the straight epistomal margin; antenna with 11 segments; one annellus; club 3 segmented; hypostomal margin deeply

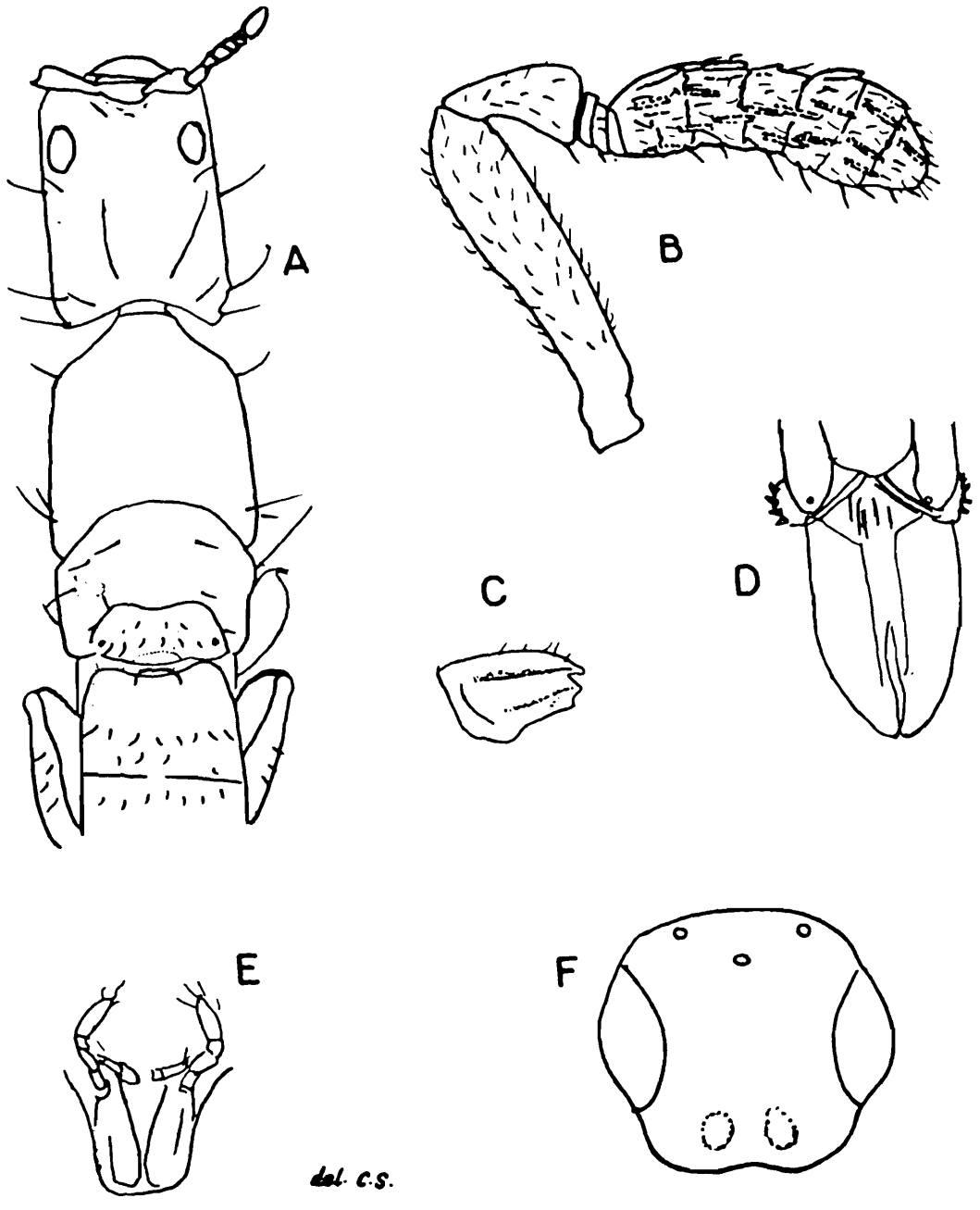

FIG. 31. *Philotrypesis anguliceps* (Westwood), male : A. Head and thorax; B. Antenna; C. Mandible; D. Genitalia; E. Hypostomal margin and mouth parts; F. Head in front vein.

emarginated; labial palpi 2 segmented; maxillary palpi 4 segmented; mandible rather long and falcate.

Thorax with some long lateral setae, scattered shorter dorsal setae; pronotum about as long as wide; propodeum distinctly free, with rather large spiracular peritremata; no wing remnant; fore tibia shorter than femur, with rather stout and long apical spines, and one spur; metataruss about 2 times the second tarsal segment, segments 2-4 short, fifth longer than other 4 combined, and wider;

middle tibia as long as femur and trochanter combined, subclavate, with scattered slender setae along the distal 0.50 of the ventral margin; tarsal segments ratio 7 : 4 : 3 : 1 : 12; hind coxa, femur and trochanter combined, tibia subequal, with; one spine in proximal part of the axial disc, rows of spines along the greater part of the dorsal margin and on the antiaxial disc, 2 stout spines at 0.50 of length of ventral margin, 2 unequal ventral spurs, and several spines next to the spurs; metatarsus expanded, with ventral spines and long dorsal setae; second tarsal segment expanded, with long dorsal setae, segments 3-4 small, fifth equal to metatarsus.

Claspers of the genitalia with 3 claws.

Male (alate) Length 1.00 mm. Body yellowish-brown.

Head slightly shorter than wide; gena 0.66 of eye; ocelli in a wide triangle; epistomal margin faintly emarginate; antennal toruli wide, their mutual distance larger than distance to the epistomal margin; antenna with 13 segments; 3 annelli; club 3 segmented; scape 4 times as long as wide, 3 times pedicel; funicular segments and club with long sensilla, most of which are visible in antiaxial aspect; all segments with scattered long setae; hypostomal margin deeply emarginate; labial palpi segments ratio 2 : 3; maxillary palpi segments ratio 8 : 9 : 7 : 18; mandible small, tridentate, with 2 glands.

Thorax with several long setae, in the anterior angles of pronotum, on parapsides, and on scutellum; parapsidal furrows complete; fore wing 3 times as long as wide; veins *sm : m : st : pm* ratio 17 : 9 : 3 : 8; stigma with 4 pustules; membrane for the greater part covered with microtrichae; hind wing 5 times longer than wide; membrane as in fore wing; fore femur as long as coxa and trochanter combined; tibia smaller, its apical armature with 2 small spines in dorsal angle, one ventral spur accompanied by some axial spines; tarsal segments ratio 8 : 3 : 3 : 3 : 8; middle tibia as long as femur and trochanter combined, with one long ventral spur; tarsal segments ratio 9 : 5 : 4 : 4 : 5; hind leg rather long; femur and tibia subequal, tibial armature consisting of 2 unequal spurs, a row of 4 antiaxial spines along apical edge, several slender spines along the axial edge, about 7 short spines along the distal third of dorsal margin; tarsal segments ratio 28 : 10 : 9 : 7 : 12.

Parameres with long setae, claspers with 4 claws.

Type locality Ceylon : Taprobana

Distribution Ceylon

Host Fig of *Ficus bengalensis* Linn.

Remarks Although somewhat aberrant in the shape of the head, *Sycoscaptetta anguliceps* Westwood certainly belongs in the genus *Philotrypesis* Förster, 1878.

Westwood mentioned three females of *Idarnella (= Philotrypesis)* of the sample from *Ficus religiosa :* "two individuals of a green colour, and one fulvous. Unfortunately I did not find any female *Philotrypesis* in the samples studied" Westwood also alluded to "a winged male of a very small fulvous species with large black eyes, possibly the male of an *Idarnes* (in his sense, one of the Sycoryctini) or *Idarnella (= Philotrypesis)*" Probably this male is the homomorphous form here tentatively described as the alate male of *Philotrypesis anguliceps* (Westwood).

Philotrypesis quadrisetosa (Westwood)

(Fig. 32)

1883 *Sycoscaptella quadrisetosa,* Westwood, *Trans. ent. Soc. London,* 43 : 375.
1904 *Tetranemopteryx 4-setosa,* Ashmead, *Mem. Carnegie* 1(4) : 239.
1909 *Tetranemopteryx quadrisetosa,* Schmiedeknecht, *Gen. Ins.,* 97 : 96.
1921 *Philotrypesis quadrisetosa,* Grandi, *Boll. Lab. Zool. Generale Agr. Portici,* 15 : 183.
1930 *Philotrypesis quadrisetosa,* Grandi, *Boll. Lab. Bot. Bologna,* 3 : 50, 179.
1938 *Tetranemopteryx quadrisetosa,* Mani, *Cat. Indian Ins.,* 23 : 35.
1954 *Philotrypesis quadrisetosa,* Joseph, *Agra Univ. J. Res.* (Sci.) 3 : 43.
1967 *Philotrypesis quadrisetosa,* Wiebes, *Tijds, Ent.,* 11 : 401.

Female : Length 3.40 mm. Head, thorax and abdomen yellowish-brown; mandibles, ocelli, posterior region of scutellum and median part of metanotum brownish-red; antennal segments 2-13, ovipositor, discal cilia, veins *m* and *sm* smoky-brown; abdomen above with a brownish band; tail-like part of abdomen dark brownish above; eyes brownish-black; wing hyaline.

Head distinctly wider than long; lateral margin forwards of eyes converging and a little over 0.50 of eye; posterior margin behind eyes convex; dorsum almost glabrous; eyes large; ocelli 3; antenna with 13 segments, annelli 3; scape hardly 6 times as long as thick, distinctly longer than following 5 segments combined, with long setae; second segment a little over 2 times as long as thick, narrow basally, thickened distally; segments 3-5 annelli, gradually becoming larger with a circle of setae; sixth 1.50 times as long as thick; segment 7 equal to 6 but a little less thick; eighth as thick as the sixth but a trifle longer; ninth equal to seventh; tenth equal to sixth; segments 11-13 form club equal to 3 times its own maximum thicknesss, the 3 segments gradually shorter; segments 6-13 with long and stout sensoria and long setae; mandible over 1.50 times as long as thick, with acute and long apical tooth, and short, blunt and stout subapical tooth; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum anterior margin rounded; lateral margins a little diverging posteriorly; scutum transversely weakly rugulose, with a

few minute setae laterally, distinctly wider than long; scapula moderately convex, transversely and obliquely rugulose, about as long as wide, with a few short setae posteriorly; scutellum flat, wider than long; axilla subconvex, lateral 0.50 inclined outwards, longitudinally rugulose, as long as wide; fore wing about 2.60 times as long as wide; costal cell about 10 times as long as broad; vein *sm* distinctly longer than *m : pm : st* ratio 38 : 20 : 10; vein *st* with 4 rounded sensillae; marginal fringe long; hind wing about 4 times as long as wide; pubescence long anteriorly, very short posteriorly; marginal fringe long; fore coxa a little less than 2.50 times as long as wide, transversely, obliquely and irregularly rugose; femur over 3 times its maximum width, longitudinally rugose; tibia distinctly shorter than femur, subequal to coxa, 7 times its maximum width; tarsi a little less than 0.75 of tibia; metatarsus shorter than following 2 segments combined; mid coxa as long as wide, transversely rugose; about 0.33 of the femur; femur over 6 times as long as wide, transversely and obliquely rugose, tibia distinctly longer than femur and trochanter combined, about 13 times its own maximum thickness, with long setae, spines and spur; tarsi shorter than tibia; metatarsus a little longer than segments 2-3 combined; hind coxa about 2.66 times its maximum width, transversely and obliquely rugose, with many setae and 4-5 macrochetae or its outer face; femur 3.75 times longer than broad; with about 5 long brownish-black setae on its outer face in a longitudinal line; tibia distinctly longer than femur, but shorter than femur and trochanter combined, over 6 times as long as its maximum width, subclaviform; tarsi distinctly longer than tibia; metatarsus equal to following 2 segments combined; propodeum 3 times as wide as long; transversely weakly rugose, with setae and a pair of spiracles with subrotund peritremes.

Abdomen upto the seventh urotergite 1.75 times the height; urites 5, 6, 7 with a few setae, eighth and ninth with many more; eighth urite about equal to the urites 3-7 combined; ninth urite about 0.42 of eighth; projecting part of the ovipositor 1.25 times urites 2-9 combined; ovipositor-valves strongly setiferous.

Male, Form 1 : Length 2.10 mm. Head brownish-yellow; thorax rusty yellowish-brown; abdomen ochraceous; mandibles rusty reddish-brown; scape and second segment ferruginous, rest of antenna pale yellow; eyes black.

Head about 1.33 times as wide as long; lateral margins converging forwards; posterior angles largely rounded; posterior margin weakly concave; dorsum of head with small setae, frontal region posterior to the anterior depression inclined with a series of semi-circular and irregular rugosities; eyes small; antenna with 11 segments; scape a little less than 2.50 times as long as its maximum thickness; second segment less than 0.25 of scape, longer than thick; third very small, thicker than long, narrow at base; fourth distinctly

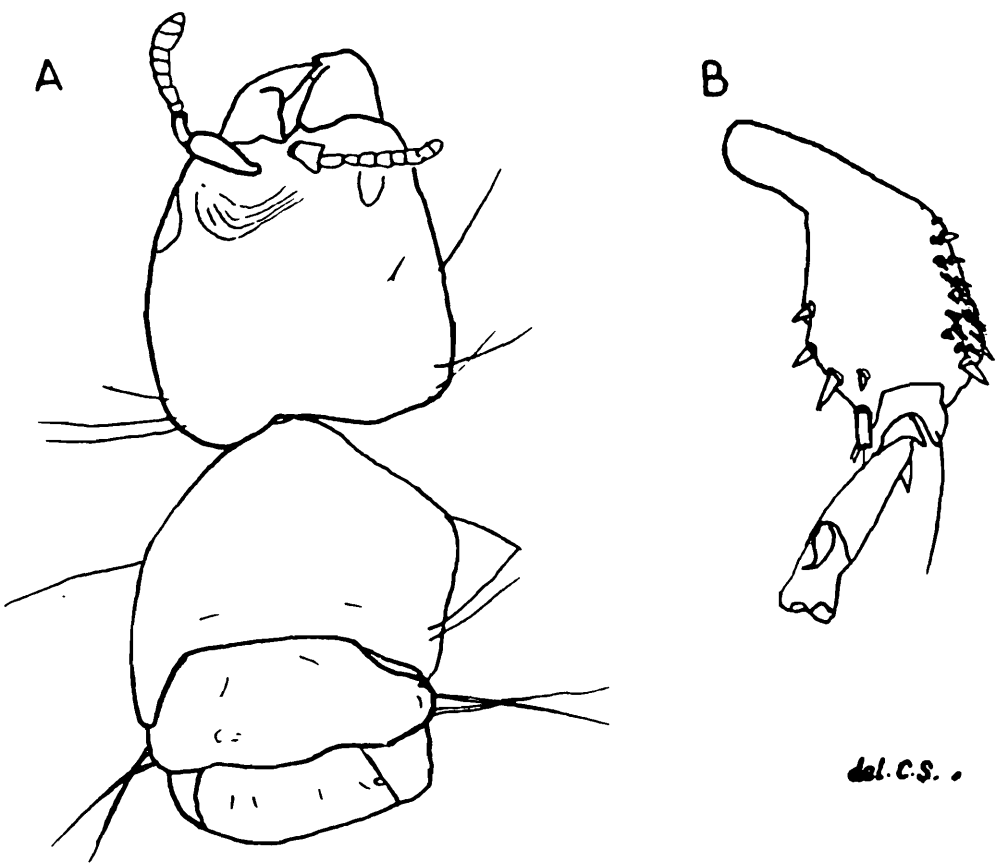

FIG. 32. *Philotrypesis quadrisetosa* (Westwood), male : A. Head and thorax; B. Hind tibia and tarsus.

thicker than long, narrow basally, with a few setae; fifth thicker than long; sixth and seventh equal, over 1.50 times thicker than long; eighth equal to the preceding, 1.50 times as thick as long; segments 9-11 fused to club, 2 times as long as its maximum thickness; segments 5-11 with setae and sensoria; mandible large, about 2.16 times as long as its maximum width, bidentate; maxillary palpus with 4 and labial palpus with 2 segments.

Propodeum 1.25 times as wide as its median length, hardly a little wider than the head, its lateral margins gently converging posteriorly, anterior margin convex; rest of thorax and propodeum about 2 times as wide as its median length; propodeal spiracles with very small rounded peritremes; fore wing longer and broader than hind wing; fore coxa 1.50 times as long as wide, transversely and obliquely rugose; femur a little less than 2 times longer than broad; tibia a little less than 2 times as long as wide, with setae, odontoid spines and bifid spur; tarsi a little over 0.50 of tibia; fifth segment 0.66 of tarsus and 1.25 times as long as wide; mid coxa 1.50 times as long as wide, transversely weakly rugose; femur large, its dorsal and ventral margins arched, 1.33 times as long as wide; tibia 2 times as long as wide, with setae, odontoid spines and spur; tarsi more

than 0.50 of tibia; fifth segment 0.66 of tarsus and 2 times as long as wide; hind coxa a little longer than 2 times its width, obliquely weakly rugose; femur 2 times as long as its maximum width, obliquely weakly rugose with setae; tibia long, over 2.75 times as long as wide, with setae, odontoid spines and spurs; tarsi a little shorter than tibia; metatarsus distinctly longer than 0.50 of tarsus, a little less than 2 times its maximum width, large and compressed, with 2 very long macrochetae on its dorsal projecting margin; second tarsal segment 0.50 of the first, dorsal margin with 2 similar macrochetae; fifth segment a little less than 0.75 of the metatarsus and 2 times as long as its maximum width.

Abdomen about 1.50 times as long as wide; eighth urite with a pair of spiracles provided with small rounded peritremes laterally; ninth with 2 small pseudocerci each with one seta; genital armature with 2 ventral flattened processes each with 2 long setae, and 2 dorsal, depressed, long and distally dilated appendages each with 3 short, stout odontoid spines.

Male, Form 2 Length 1.40 mm. Head, thorax and abdomen pale yellowish-brown; mandibles pale brownish-red; legs ochraceous; eyes black.

Head hardly a little wider than long; lateral margins of head converging forwards; anterior and posterior angles of head rounded; posterior margins of head weakly concave; frontal region posterior to anterior depression inclined but almost without any rugosities; mandible 1 75 times as long as wide, bidentate.

Thorax with pronotum distinctly wider than long, hardly a little wider than head; its lateral margins faintly converging posteriorly; anterior margin convex; rest of thorax and propodeum 1.33 times as wide as its median length; fore wing short, broad and stumpy with a few sensillae; hind wing long and filamentous, 3 times fore wing, with a few setae; fore coxa a little longer than 1.50 times as long as wide, obliquely weakly rugose, with setae; femur a little less than 2 times as long as wide; tibia a little shorter than femur, about 1.33 times as long as its maximum width, with setae, odontoid spines and a bifid spur; mid coxa a little longer than wide; femur large, its dorsal and ventral margins as long as its maximum width, with a few setae and sensillae; tibia long, 2.75 times as long as its width, with setae, odontoid spines and a spur; tarsi distinctly longer than 0.50 of tibia; fifth segment clearly longer than 0.50 of tarsi and about 2.25 times its own width; hind coxa a little less than 2 times as long as wide, obliquely weakly rugose; trochanter a little less than 2 times as long as its width; femur about 2 times as long as its maximum width with setae and sensillae; tibia long, about 3 times as long as wide, with setae, odontoid spines and spurs; tarsi a little longer than tibia; metatarsus about 0.50 of tarsus, 2 times as long as its own width, large, subcompressed, its dorsal margin well projecting with 2 long

macrochetae; second segment 0.50 of the preceding, its dorsal projecting margin with 2 long macrochetae; length of fifth segment 0.71 of the metatarsus and 1.66 times as long as its own width.

Abdomen about 2 times longer than wide; eighth urite with a pair of spiracles, with small rounded peritremes laterally; ninth with 2 small pseudocerci, each with a seta; genital armature with 2 distal, ventral and flattened processes each bearing 2 long setae, and 2 dorsal, depressed, long and distally dilated appendages each provided with 3 short, stout, odontoid spines; penis large, sublanceolate.

Type locality : Ceylon : Taprobana

Distribution Ceylon, India : Travancore

Host : Fig of *Ficus asperrima* Roxb.

Philotrypesis pilosa Mayr

1906 *philotrypesis pilosa,* Mayr, *Wien, entom. Zeitung,* 25 : 174-175.

1926 *Philotrypesis* sp., Grandi, *Bull. Soc. Zool. France,* 53 : 79.

1928 *Philotrypesis pilosa,* Grandi, *Treubia,* 8 : 362.

1930 *Philotrypesis pilosa,* Grandi, *Boll. Lab. Ent. Bologna,* 3 : 157-158.

1954 *Philotrypesis pilosa,* Joseph, *Agra Univ. J. Res.* (Sci.) 3 : 51.

Female : Length 3.40 mm. Head, thorax and abdomen yellowish-brown; mandibles, ocelli, posterior region of scutellum and median part of metanotum somewhat brownish-red; antennal segments 2-13, ovipositor and wing pubescence smoky-brown; eyes brownish-black; wing hyaline; veins amber; abdomen above with a brownish band on each tergite; tail-like part of the abdomen dark brownish above.

Head distinctly wider than long; lateral margins of head forwards of eyes 0.50 of eye, converging forwards; posterior margin of head behind eyes broadly rounded; eyes large; ocelli 3; dorsum head with a few minute setae; antenna with 13 segments, of which 3 annelli; scape about 5.43 times longer than thick; distinctly longer than following 5 segments combined; second segment 2 times as long as thick; segments 3-5 form annelli, each with a circlet of setae and increasing in size from the third to fifth; sixth as long as the second but distinctly thicker than it; seventh equal to sixth but a little less thick; eighth a little longer and thicker than the preceding segment; ninth equal to seventh but a little less thick; tenth as thick as the seventh but a little shorter; 11-13 form club, hardly 3.50 times its maximum thickness, segments decreasing in length from 11-13; segments 6-13 with rows of long, slender sensoria and long setae; mandible 2 times as long as wide, bidentate; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum with lateral margins a little diverging posteriorly, with a few minute setae; scutum transversely rugulose, a little less than 1.50 times as wide as long, moderately convex anteriorly; scapula weakly convex, transversely rugulose, with a few small setae laterally, a little wider than long; scutellum flat, wider than long, irregularly weakly rugose; axilla a little longer than wide, with a few setae; thorax and propodeum about 1.50 times its maximum width; fore wing a little more than 2.50 times longer than broad; costal cell about 10 times as long as its greatest width; distal extremely of wing rounded; veins *sm m pm st* ratio 35 : 33 : 25 : 10; hind wing about 4 times as long as wide, cuticle with long pubescence in anterior and distal extremities, with minute pubescence in the hinder region; marginal fringe moderately long; fore coxa a little over 2 times as long as its maximum width, transversely and obliquely rugose; femur a little over 3 times as long as its maximum width, longitudinally weakly rugulose, hardly as long as the coxa and trochanter combined; tibia distinctly shorter than femur, a little over 6 times as long as its maximum width, with long setae, spines and a long bifid spur; tarsi 0.82 of tibia; metatarsus equal to following 2 segments combined; fifth segment equal to metatarsus; mid coxa longer than wide, transversely rugose; femur 6 times as long as wide, tibia long, distinctly longer than femur and trochanter combined, 12 times as long as its maximum width, with long setae, spines and a long spur; tarsi shorter than femur; metatarsus a little longer than following 2 segments combined; hind coxa 2.50 times as long as its width, transversely and obliquely rugose, with setae and about 4 macrochetae on its outer face; femur a little less than 4 times as long as wide, with setae, of which about 4 on the outer face are larger, distinct and disposed in the median longitudinal line; tibia distinctly longer than femur and much shorter than femur and trochanter combined, a little over 6 times as long as its maximum width, with setae, spines and spurs; metatarsus a little longer than following 2 segments combined; propodeum 3 times as wide as its maximum length, transversely rugose, with setae and a pair of spiracles with small subrotund peritremes.

Abdomen upto seventh tergite 1.50 times its height; urotergites 6-7 with a few long setae, eighth and ninth with numerous longer and stouter setae; tail-like part of abdomen hardly equal to the rest of body; eighth urite very long, 1.60 times as long as abdomen upto seventh segment; ninth urite a little over 0.25 of eighth; projecting part of ovipositor 1.33 times as the urites 2-13; ovipositor-valves strongly setiferous.

Male, Form 1 Length 2.30 mm. Head transparent brownish-yellow; thorax yellowish-brown; abdomen pale yellowish-brown; mandibles and antennal scape reddish-brown; rest of antenna yellowish; legs brownish-yellow; eyes black; wings hyaline.

Head, pronotum above with short setae; legs densely clothed with long thick setae; sides and hinder margin of head with many short setae; abdomen with sparse long setae.

Head subrectangular, 1.20 times as long as wide; anterior and posterior angles not strongly rounded; epistomal margin emarginate in the middle; lateral margins of head faintly converging forwards; posterior margin weakly concave; frontal region posterior to anterior depression inclined, with a series of semi-circular and irregular rugosities; eyes small; antenna with 11 segments; scape 3 times as long as thick; second segment 2 times as long as thick; third reduced to annellus; fourth as long as thick; fifth a little longer than thick; sixth a little longer than fifth but trifle less thick; seventh as long as sixth but slightly thicker; eighth longer and thicker than seventh; segments 9-11 fused to club, a little less than 2.50 times its maximum thickness; segments 5-11 with sensoria; mandible large and stout, 0.83 times as long as wide, tridentate, teeth and setae; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum distinctly wider than long, wider than head, with short setae; lateral margins converging forwards; rest of thorax and propodeum a little over 1.50 times as wide as its median length; propodeal spiracles with small rounded peritremes; fore wing a little over 1.33 times as long as hind wing; fore coxa over 1.50 times as long as wide, obliquely weakly rugose, with thick setae; femur about 2.50 times longer than wide, longer than coxa, obliquely weakly rugose, with setae; tibia 2.25 times as long as its maximum width, shorter than femur, with long setae, odontoid spines and a bifid spur; tarsi less than 0.50 of the tibia;fifth segment 0.75 of tarsus, 2 times as long as its own maximum width; mid coxa a little less than 1.50 times as long as wide, obliquely weakly rugose, with long setae; tibia longer than femur, 3 times as long as wide, with long setae, odontoid spines and tibial spur; tarsi a little longer than 0.50 of tibia; fifth segment 0.66 of tarsus; hind coxa a little less than 2.50 times as long as wide, obliquely rugose, with long setae; 2.50 times as long as wide, with many long setae; tibia longer than femur, a little less than 2.50 times as long as wide, with setae, odontoid spines and spurs; tarsi 0.66 of tibia; metatarsus about 0.50 of tarsi, with 2 long macrochetae, setae and odontoid spines; second segment with a single long macrocheta above; fifth segment a little longer than metatarsus.

Abdomen 2 times as long as wide; urotergites with a row of long setae near distal margin; eighth urotergite with a pair of spiracles with small rounded peritremes laterally; ninth with 2 small pseudocerci with one seta; genital armature with 2 distal, ventral and flattened processes with 2 long setae, and 2 dorsal, depressed, long and distally dilated appendages, each with 3 short, stout odontoid spines; penis.

Male, Form 2 : Length 1.80 mm. Head transparent brownish-yellow; thorax and abdomen yellowish-brown; mandibles and scape

reddish-brown; rest of antenna pale yellow; legs yellowish-brown except for somewhat pale reddish-brown tibiae; eyes black; wings hyaline.

Head subrectangular, with anterior and posterior angles not strongly rounded, a little less than 1.25 times as long as wide; epistomal margin emarginate in the middle; lateral margins of head weakly converging forwards and with many short setae; posterior margin weakly concave, with short setae; frontal region posterior to anterior depression inclined, with a series of semi-circular and irregular rugosities; ventral side of head with a clothing of setae; eyes small; antenna with 11 segments; scape 3 times as long as thick; second segment 1.66 times as long as thick; third reduced and ring-like; fourth a little less than 1.25 times as long as thick; fifth a little thicker than long; sixth as long as thick, a little longer than preceding segment, seventh a little longer than sixth, longer than thick; eighth longer and thicker than seventh, longer than thick; segments 9-11 fused to club 2 times its thickness; segments 5-11 with sensoria; mandible a little less than 2 times its maximum width, tridentate; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum wider than long, wider than head; lateral margins converging forward, with short setae; rest of thorax and propodeum a little over 0.66 of its width; fore wing 1.25 times as the hind wing; fore coxa 2 times as long as wide, its outer face with numerous long setae, obliquely weakly rugose; femur 2.50 times as long as wide, shorter than coxa; tibia a little shorter than femur, about 2.50 times as long as its maximum width, with setae, odontoid spines and a bifid spur; tarsi 0.50 of tibia; middle coxa a little less than 1.50 times as long as wide, obliquely weakly rugose, with long setae; femur a little less than 2 times as long as wide; tibia long, a little over 3 times as long as wide, with setae, odontoid spines and spur; tarsi distinctly longer than 0.50 of tibia; fifth segment 0.62 of tarsus; hind coxa a little less than 2.50 times as long as wide, obliquely weakly rugose; its inner face with setae, outer face with numerous long setae; femur about 2.25 times as long as wide; tibia distinctly longer than femur, about 3.50 times as long as wide, with setae, odontoid spines and spurs; tarsi 0.66 of tibia; metatarsus about 0.50 of tarsus, with 2 long macrochetae above; second segment with one macrocheta above; fifth segment equal to metatarsus.

Abdomen 2 times longer than wide; urotergites with a few setae; eigth urotergite with a pair of spiracles with small rounded peritremes situated laterally; ninth with a pair of pseudocerci, each with one seta; genital armature with 2 distal, ventral, flattened processes, each with two long setae, and 2 dorsal, depressed, long and distally dilated appendages, each with 3 short, stout odontoid spines.

Type locality Nagambadam (Kottayam)
Distribution Travancore, Dehra Dun
Host Fig of *Ficus hispida* Linn.

Philotrypesis longispinosa Joseph

1954 *Philotrypesis longispinosa,* Joseph, *Agra Univ. J. Res.* (Sci.) 3 : 60.

Female : Length 3.80 mm. Head, thorax and abdomen yellowish-brown; apical 0.50 of mandibles and hinder region of scutellum somewhat brownish-red; antennal segments 6-13 and ovipositor smoky-brown; wings hyaline; pubescence pale brownish-black; abdomen above each tergite with a dark brownish-black transverse band, those on the fourth and fifth urotergites large; tail-like part of abdomen above with a median longitudinal dark brownish-black band; eyes coralline; ocelli pale pinkish-white.

Head distinctly wider than long; epistomal margin emarginate; lateral margin of head forwards of eyes 0.50 of eye, and converging forwards; posterior margin of head behind the eyes broadly rounded; eyes large; dorsum of head rugose, more so posteriorly; antenna with 13 segments, of which 3 annelli; scape about 6 times as long as thick, much longer than following 5 segments combined; second segment a little less than 2 times as long as thick; segments 3-5 form annelli, each with a whorl of setae and increasing in size from 3-5; sixth 2 times as long as thick; seventh a little longer and thicker than the sixth; eighth a little longer than seventh, 2 times as long as thick; ninth as long as seventh but a little less thick; tenth a little shorter than sixth but slightly thicker; segments 11-13 form club 3.50 times longer than thick; segments 6-13 with long and slender, and short, stout sensoria with long setae; mandible about 1.33 times as long as wide, bidentate; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum with lateral margin a little diverging posteriorly, transversely and obliquely weakly rugulose; scutum about 2 times as wide as long, transversely rugulose, with a few minute setae; scapula a little wider than long, transversely rugulose, with a few small setae; scutellum wider than long, flat; axilla as long as wide; fore wing 2.50 times as long as wide; distal extremity rounded; costal cell about 10 times as long as broad; veins *sm : m : pm : st* ratio 55 : 45 : 30 : 10; vein *st* with 4 rounded sensillae at its distal end; discal ciliation sparse, in anterior 0.50 times longer than posterior; fringe short; hind wing about 4 times as long as wide; fore coxa a little over 2 times as long as wide, transversely rugose; femur large, a little less than 2.50 times as long as wide; weakly longitudinally rugose; tibia 6 times as long as wide, longitudinally and obliquely weakly rugose, with setae, spines, odontoid spines and spur; tarsi a little less than 0.66 of tibia; metatarsus a little longer than following 2 segments combined; fifth hardly a little longer than metatarsus; middle coxa a little wider than long, transversely weakly rugose; femur about 5.50 times as long as wide, transversely and obliquely rugose; tibia long, length 13 times width, longer than femur and trochanter combined, with setae and apical spur; tarsi a little shorter

than tibia; metatarsus equal to following 2 segments combined; hind coxa a little over 2.25 times as long as wide; obliquely rugose, with about 5 macrochetae on its outer face; femur 3.50 times as long as wide, obliquely and transversely rugose, setae and sensillae; tibia a little longer than femur, 5.75 times as long as wide, obliquely rugose, with setae, sensillae, spines and spurs; tarsi much longer than tibia; metatarsus a little longer than following 2 segments combined; propodeum a little less than 3 times as wide as long, transversely and obliquely weakly rugose, with setae and a pair of spiracles with small rounded peritremes.

Abdomen upto seventh tergite a little less than 2 times its height; seventh urotergite with a few setae, eighth and ninth with numerous long setae; tail-like part of abdomen a little less than 2 times the length of abdomen upto seventh tergite; eighth urotergite about 1.50 times as long as abdomen upto seventh tergite; ninth a little less than eighth; ovipositor very long, its projecting part 1.66 times as long as length of urotergites 2.9; ovipositor setiferous.

Male : Length 2.40 mm. Head pale reddish-brown; thorax and abdomen yellowish-brown; mandibles reddish-brown; trochanter, femur and tibia of fore leg and parts of coxa, trochanter and tibia of hind leg rusty red-brown; scape pale reddish-brown, rest of antenna pale yellow; eyes black.

Head wider than long; lateral margins gently coverging forwards, with a few setae; posterior margin of head a little concave; anterior angles of head obtuse but not rounded; frontal region posterior to anterior depression with semi-circular rugosities; posterior extremity of head transversely rugulose; dorsum with numerous long macrochetae; eyes small; antenna with 11 segments; scape 3.33 times as long as thick; segment 2 long and slender, about 2.50 times as long as thick, with a few setae distally; third segment small but longer than in most of the other species of the genus, distinctly thicker than long; segments 4-6 longer than thick, equal and increasing in thickness; seventh and eighth equal, as long as thick; segments 9-11 fused to club, a little less than 2.50 times as long as its maximum thickness; segments 5-11 with long setae and sensoria; mandible long, 2.28 times as long as wide, tridentate; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum 1.33 times as wide as long; lateral margins converging posteriorly; pronotum with about 12 macrochetae and a few minute setae; rest of thorax and propodeum 1.70 times as wide as its median length; mesonotum with about 15 macrochetae and many small setae; metanoto-propodeum with about 6 macrochetae; propodeum with a pair of spiracles with small rounded peritremes; fore wing 1.25 times as long as hind wing; fore coxa large, 1.20 times as long as wide, obliquely weakly rugose, with stout setae and sensillae; femur subequal to coxa, about 2.50 times its maximum width, longitudinally

weakly rugose, with short setae; tibia a little longer than 0.82 of femur, with setae, spines, long odontoid spines and a bifid spur; tarsi less than 0.50 of tibia; fifth segment about 0.75 of tarsus; mid coxa a little over 1.50 times as long as wide, obliquely weakly rugose, with setae; femur a little longer than 1.50 times its width, longitudinally weakly rugose, with a few short setae; tibia 1.50 times as long as the femur, a little over 2.66 times as long as its maximum width, claviform, with setae, odontoid spines, sensillae and tibial spur; tarsi 0.60 of tibia; fifth segment 0.66 of tarsus; hind coxa very long, a little over 2.50 times as long as wide; femur a little less than 2.50 times its width, with long spines and setae; tibia distinctly longer than femur, about 4 times as long as wide, with setae, spines, odontoid spines and tibial spurs; tarsi a little longer than 0.75 of tibia; metatarsus 0.50 of tarsi, its dorsal projecting margin with 2 extremely long macrochetae; second segment a little longer than 0.50 of metatarsus, with 2 long macrochetae on its dorsal projecting margin; fifth segment equal to metatarsus.

Abdomen with a somewhat dense clothing of long and short setae dorsally, ventral side with a few short setae; eighth urotergite with a pair of spiracles with small rounded peritremes situated laterally; ninth with a pair of small pseudocerci, each with one long seta; genital armature with a pair of ventral, flattened processes each with 2 setae, and 2 dorsal, depressed, long and distally dilated processes each with 4 short, stout odontoid spines; penis not exserted.

Type locality : Belgaum

Host Fig of *Ficus mysorensis* Hayne

Philotrypesis palmata Joseph

1954 *Philotrypesis palmata,* Joseph, *Agra Univ. J. Res.* (Sci.) 3 : 66.

Female : Length 2.90 mm. Head, thorax and abdomen yellowish-brown; mandibles and dorsum of fourth and fifth urotergites somewhat brownish-red; antennal segments 3-13 and the hinder part of scutellum smoky-brown; eyes coralline; wings hyaline; abdomen above with a brownish-black band on tergites; tail-like part of abdomen brownish-black above; ovipositor dark sooty-brown.

Head wider than long; lateral margin forwards of eye a little less than 0.66 of eye, converging forwards; posterior margin of head behind eyes broadly rounded; dorsum very faintly rugulose, especially posteriorly; antenna with 13 segments, of which 3 form annelli; scape 5 times as long as thick, longer than following 5 segments combined; second segment less than 2 times thickness, segments 3-5 form annelli; sixth 1.50 times as long as thick; seventh a little longer and thicker than sixth; eighth equal to sixth; ninth equal to seventh; tenth short, a little longer than thick; 11-13 form club

of length 2.50 times thickness; segments 6-13 with short and stout sensoria and long setae; mandible about 1.50 times as long as wide, bidentate; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum lateral margins a little diverging posteriorly transversely rugulose; scutum about 1.50 times as wide as long, transversely rugulose, with a few small setae; scapula a little wider than long, transversely rugulose; scutellum wider than long, reticulately weakly rugulose; axilla as long as wide, with a few microscopic setae at hinder angle; thorax and propodeum 1.50 times as long as maximum width; fore wing about 2.50 times as long as wide; distal extremity rounded; costal cell about 10 times as long as wide; veins *sm m pm st* ratio 65 : 56 : 20 : 10; vein *st* with 4 small rounded sensillae at distal extremity; hind wing about 4 times as long as wide; pubescence in anterior margin longer than those posterior; marginal fringe moderately long; fore coxa a little over 2 times as long as wide, transversely and obliquely rugulose; femur 2.66 times as long as wide, as long as coxa and trochanter combined; tibia equal to coxa, about 5.50 times as long as wide, with setae, spines and a long bifid spur; tarsi 0.75 of tibia; metatarsus equal to following 2 segments combined; middle coxa a little longer than wide, obliquely and transversely rugulose; tibia longer than femur and trochanter combined, about 10 times as long as wide, with setae, spines and spur; tarsi distinctly shorter than tibia; metatarsus shorter than following 2 segments combined; hind coxa about 2.50 times as long as wide, transversely and obliquely rugose, outer face with about 5 macrochetae; femur 3.50 times as long as wide, obliquely rugose, with about 6 specialized setae on outer face, sensillae and setae on inner face; tibia distinctly longer than femur, a little less than 6 times as long as wide, obliquely weakly rugulose, with sensillae, setae, odontoid spines and spurs; tarsi distinctly longer than tibia; metatarsus much shorter than following 2 segments combined; propodeum a little over 3 times as wide as long, transversely and obliquely rugulose, with setae and a pair of spiracles with small rounded peritremes.

Abdomen upto seventh tergite 1.25 times height; urotergites 6-7 with a few long setae; tail-like part of abdomen about 1.33 times as long as abdomen upto seventh tergite; eighth urite shorter than abdomen upto seventh tergite; ninth a little over 0.50 of eighth; projecting part of ovipositor comparatively short, much longer than urites 2-9.

Male, Form 1 : Length 2.20 mm. Head rusty yellow-brown; pronotum yellowish-brown, rest of thorax and abdomen pale yellowish-brown; legs pale yellowish-brown, trochanter, femur and fore tibia and hind trochanter and proximal part of tibia rusty yellow-brown; mandibles reddish-brown; antennae yellowish-white except for yellowish-brown scape; eyes black.

Head a little wider than long; lateral margins of head converging forwards; posterior margin of head weakly concave; posterior angles of head obtuse and rounded; frontal region posterior to anterior depression with semi-circular rugosities; dorsum with long macrochetae and small setae; antenna with 11 segments; scape about 3.25 times longer than thick; second segment 2 times as long as thick; third small, 1.50 times as thick as long; fourth longer than thick; fifth a little shorter than fourth but thicker than it; sixth equal to fifth and as long as thick; seventh a little longer than the preceding segment, equal to thickness; eighth a little longer than seventh, as long as thick; segments 9-11 fused to club 2 times its thickness; segments 5-11 with setae and short and stout sensoria; mandible long, a little less than 2 times as long as wide, tridentate; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum somewhat wider than head, about 1.33 times as wide as long, anterior margin convex; lateral margins slightly converging posteriorly; pronotum with a dozen macrochetae and many small setae; rest of thorax and propodeum 1.60 times as wide as median length; mesontum with about 8 macrochetae; metanoto-propodeum with about 10 macrocetae; propodeal tracheal spiracles with small rounded peritremes; fore wing 1.33 times hind wing; fore coxa stout, 1.25 times as long as wide, obliquely weakly rugose; femur as long as coxa, less than 2 times as long as wide, faintly rugulose; tibia shorter than femur, 2 times as long as wide, with setae, odontoid spines and bifid spur; tarsi 0.60 of tibia; fifth segment 0.66 of tarsus; middle coxa 1.50 times as long as wide, obliquely weakly rugose, with a few setae; femur a little over 1.50 times as long as wide, transversely and obliquely weakly rugose; tibia distinctly longer than femur, 2.60 times as long as wide, claviform, with setae, odontoid spines and spur; tarsi longer than 0.50 of tibia; fifth segment a little over 0.50 of tarsus; hind coxae a little less than 2 times as long as wide, obliquely rugose, with 13 macrochetae on outer face; femur a little less than 2 times width, transversely and obliquely weakly rugose; tibia longer than femur, longer than 2 times own width, with setae, odontoid spines and spur; tarsi distinctly shorter than femur; metatarsus a little longer than 0.50 of tarsus, about 2.50 times as long as width, ventral margin with long, stout spines, dorsal margin at apex with 2 very long macrochetae; second segment small, dorsal margin at apex with 2 smaller macrochetae; fifth segment a little shorter than metatarsus.

Abdomen a little over 1.50 times its width; urotergites with a row of long setae; eighth with a pair of spiracles with small rounded peritremes; ninth with a pair of small pseudocerci, each bearing a long seta; genital armature with a pair of ventral, flattened processes each with 2 long setae apically, and a pair of dorsal, long, depressed, distally dilated appendages, each with 3 short, stout odontoid spines.

Male, Form 2 Length 1.90 mm, slightly paler than in Form 1 Head as long as wide; lateral margins converging forwards; posterior margin of head weakly concave; frontal region posterior to anterior depression with semi-circular rugosities; dorsum with many small setae and with macrochetae; eyes small; antenna with 11 segments; scape 3.50 times as long as thick; second segment 2 times as long as thick, with long setae; third small, 1.50 times as thick as long; fourth and fifth segments equal, a little longer than thick; sixth slightly thicker than long; seventh as long as sixth but thicker than it; segments 9-11 fused to club, 2.33 times thickness; segments 5-11 with sensoria and setae; mandible long, a little less than 2 times as long as wide, tridentate; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum a little wider than head, about 1.25 times as wide as median length; lateral margins weakly converging posteriorly; posterior margin concave; pronotum with a dozen macrochetae; rest of thorax and propodeum about 1.66 times as wide as median length; mesonotum with 6 macrochetae, of which 2 posterior very long; propodeum with about 6 macrochetae and spiracles with small rounded peritreme; fore wing a little longer than hind wing; fore coxa about 1.33 times as long as wide, obliquely weakly rugose, with setae; femur a little less than 2 times as long as thick, shorter than coxa, weakly rugulose, with setae; tibia shorter than femur, 2 times as long as wide, with setae, odontoid spines and a bifid spur; tarsi 0.60 of tibia; fifth segment about 0.66 of tarsus; middle coxa about 1.33 times as long as wide, obliquely weakly rugose; femur about 1.50 times as long as wide, obliquely weakly rugose; tibia claviform, a little less than 2 times as long as wide, distinctly longer than femur, with setae, odontoid spines and spur; tarsi a little over 0.66 of tibia; fifth segment 0.60 of tarsal length; hind coxa 0.16 times as long as wide, with transverse and oblique rugosities and with 3 macrochetae on outer distal part, of which one is longer than rest; femur less than 2 times as long as wide, obliquely weakly rugose; tibia as long as femur, 3 times as long as its own maximum width, with setae, odontoid spines; tarsi 0.75 of tibia; metatarsus a little over 0.50 of tarsus, more than 2 times as long as width, with 2 very long macrochetae on dorsal projecting margin; second segment small with 2 shorter macrochetae on dorsal projecting margin; fifth segment 0.80 of metatarsus.

Abdomen about 1.33 times as long as wide; urotergites with a row of long setae; eighth with a pair of spiracles with small rounded peritremes laterally; ninth with a pair of small pseudocerci each with a seta; genital armature with a pair of ventral, flattened processes, each with 2 setae distally, a pair of dorsal, long, depressed, distally dilated appendages bearing 3 short, stout odontoid spines.

Male, Form 3 : length 1.60 mm., slightly paler than Form 2. Head a little longer than wide; lateral margins converging forwards;

posterior margin weakly concave; anterior and posterior angles rounded; frontal region posterior to anterior depression with semi-circular rugosities; dorsum with about a dozen macrochetae and a few short setae; eyes small; mandible a little longer than 1.66 times width, tridentate.

Pronotum wider than long, as wide as head; lateral margins converging posteriorly; pronotum with a few macrochetae; rest of thorax and propodeum a little over 1.50 times as wide as long; mesonotum with 2 pairs of setae; mentanoto-propodeum with 4 pairs of macrochetae; fore and hind wings small; reduced; fore coxa 1.33 times as long as wide, obliquely weakly rugose; femur about 2 times as long as wide, obliquely weakly rugulose; tibia a little over 2 times as long as wide, 0.83 of femur, with setae, odontoid spines and a bifid spur; tarsi 0.60 of tibia; metatarsus 0.66 of tarsus; middle coxa less than 1.50 times as long as wide, transversely and obliquely weakly rugose; trochanter less than 2 times as long as wide, with setae and sensillae; femur 1.50 times as long as wide, with setae and sensillae; femur 1.50 times as long as wide, obliquely weakly rugose, setae; tibia claviform, distinctly longer than femur, about 2.80 times as long as wide, with setae, odontoid spines and spur; tarsi about 0.66 of tibia; fifth segment a little over 0.50 of tarsus; hind coxa a little over 1.75 times as long as wide, obliquely weakly rugose; femur a little over 1.66 times as long as wide, obliquely weakly rugose, with setae; tibia long, about 3.50 times as long as wide, with setae, odontoid spines and spurs; tarsi about 0.60 of tibia; metatarsus 0.50 of tarsus, a little longer than 2 times its width, dorsal projecting margin with 2 very long macrochetae; second segment small, its dorsal projecting margin with 2 shorter macrochetae; fifth segment shorter than metatarsus.

Abdomen 1.66 times longer than wide; tergites with a row of long setae; eighth urotergite with a pair of spiracles with small rounded peritremes situated laterally; ninth with a pair of pseudocerci each with a single seta; genital armature with 2 ventral, flattened processes, each bearing 2 setae distally, and a pair of dorsal, depressed, long and distally dilated appendages, each with 3 short, stout odontoid spines.

Type locality : Dehra Dun

Host Fig of *Ficus palmata* Forsk.

Philotrypesis dunia Joseph

1954 *Philotrypesis dunia,* Joseph, *Agra Univ. J. Res.* (Sci.) 3 : 77.

Female : Length 2.61 mm. Head, thorax and abdomen sooty-brown; antennae somewhat paler; eyes coralline; ocelli pale pinkish; legs melleous except for smoky-brown coxae; tail-like part of abdomen brownish-black above; ovipositor smoky-brown; wings hyaline, pubescence dark brown, veins amber

Head a little wider than long, somewhat rounded; lateral margin of head forwards of eyes about 0.50 of eye and converging forwards; posterior margin of head behind eyes rounded; antennae inserted near anterior margin of head, ocellar triangle obtuse; antenna submoniliform, with 13 segments, of which 3 form annelli; scape a little less than 6 times as long as thick, longer than following 5 segments combined; second segment a little over 2 times as long as thick, slightly thicker than scape; segments 3-5 form annelli, each with a whorl of setae; sixth a little longer than thick; seventh a little longer than sixth; eighth and ninth segments equal; tenth as long as ninth but a little thicker; segments 11-13 form club equal to 3 times thickness; segments 6-13 with sensoria and long setae; mandible a little longer than 1.50 times its width; maxillary palpus with 4 and labial palpus with 2 segments; their terminal segments short and ovoid.

Pronotum with lateral margins a little diverging posteriorly, with a few small setae; scutum convex, hardly a little wider than long, with a few small setae; scapula 2 times as wide as long, convex, with a few small setae; scutellum large and flat, wider than long; axilla distinctly longer than wide, with a few small setae; thorax and propodeum 1.25 times as long as wide; fore wing 2.75 times as long as wide; costal cell 12 times as long as wide; veins *sm m : pm : st* ratio 50 : 40 30 : 10; pubescence dense, of moderate length; hind wing a little over 4 times as long as broad; pubescence in the anterior 0.50 longer than those posteriorly; marginal fringe long; fore coxa 2.25 times as long as wide, obliquely and transversely rugose, with a few setae; femur 3 times longer than wide; longitudinally weakly rugose, shorter than coxa and trochanter combined; tibia shorter than femur about 5.50 times as long as wide; with setae, odontoid spines and a long bifid spur; tarsi 0.80 of femur; metatarsus equal to following 2 segments combined; middle coxa 1.25 times as long as wide, transversely rugose; femur 5.50 times as long as maximum width, obliquely weakly rugose, tibia long, 14 times as long as wide, 1.50 times femur, with setae and a long apical spur; tarsi a little shorter than tibia; metatarsus a little longer than following 2 segments combined; hind coxa 2.66 times as long as wide, obliquely rugose, with 3 macrochetae on outer face distally; femur a little over 4 times as long as wide, transversely weakly rugose, with 3 specialized setae on its outer face; tibia longer than femur, length a little less than 10 times width, obliquely weakly rugose, with setae, spines and spur; tarsi longer than tibia; metatarsus longer than following 2 segments combined; propodeum 2.70 times as wide as length, transversely and obliquely rugose, with setae and a pair of spiracles with small rounded peritremes.

Abdomen upto seventh tergite 1.66 times its height; seventh urotergite with a few short setae; eighth and ninth urotergites with many long setae; tail-like part of abdomen 1.25 times as long as

abdomen upto seventh tergite; eighth urotergite markedly shorter than abdomen upto seventh segment; ninth over 0.50 of the eighth; projecting part of ovipositor longer than length of urotergites 2-9; ovipositor setiferous.

Male, Form 1 : Head rusty yellowish-brown; eyes black; mandibles brownish-red. Head hardly a little longer than wide; lateral margins weakly converging forwards; posterior margin of head weakly concave; posterior angles broadly rounded; frontal region posterior to anterior depression with wavy, semi-circular rugosities; dorsum of head with scars of about a dozen macrochetae many small setae; mandible a little over 2 times as long as wide, tridentate.

Male, Form 2 : Length 1.60 mm. Head yellowish-brown, thorax and abdomen a little paler; mandibles pale brownish-red; scape and pedicel yellowish-brown, rest of antenna yellowish-white; legs yellowish-brown, with a rusty yellowish-brown tinge for trochanters and tibiae; eyes black.

Head distinctly longer than wide; lateral margins of head weakly converging forwards; posterior margin of head weakly concave; posterior angles broadly rounded; frontal region posterior to anterior depression with wavy, semi-circular rugosities; dorsum without macrochetae, with a few small setae; antenna with 11 segments; scape short, stout, 2 times as long as thick; segment 2 longer than 1.50 times thickness; segment 3 small, thicker than long; fourth 2 times as thick as long; fifth longer and thicker than fourth, a little thicker than 2 times its length; sixth as long as fifth but slightly thicker; seventh distinctly longer and a little thicker than preceding segment; eighth shorter and thicker than seventh; 9-11 fused to club 1.50 times its maximum thickness; segments 5-11 with setae and sensoria; mandible a little less than 2 times as long as wide, tridentate; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum a little wider than long, hardly a little wider than head; lateral margins weakly converging forwards; rest of thorax and propodeum about 1.50 times as wide as its median length; propodeal tracheal spiracles with small, subrotund peritremes; wings much reduced; fore coxa 1.20 times as long as wide, obliquely weakly rugose; femur a little shorter than coxa, 2.33 times as long as wide, obliquely weakly rugose, tibia a little less than 0.66 of femur, 2 times as long as wide, with setae, odontoid spines and a bifid spur; tarsi about 0.66 of tibia; fifth segment 0.62 of tarsus; about 1.50 times as long as wide, obliquely weakly rugose; femur a little over 1.50 times its width; tibia claviform, about 2.62 times as long as wide, with setae, odontoid spines and spur; tarsi 0.75 of tibia; fifth segment distinctly longer than 0.50 of tarsus; hind coxa about 2.25 times as long as wide, obliquely weakly rugose, with 2 macrochetae on its outer face distally; femur 2 times as long as wide, obliquely weakly rugose; tibia about 2.62 times width, with setae, odontoid spines and spurs; tarsi equal to tibia; metatarsus about 0.60 of tarsus; about 2

times as long as wide; dorsal margin with two long macrochetae; second segment about 0.50 of metatarsus and 1.50 times as long as width, dorsal projecting margin with 2 long macrochetae; fifth segment about 0.33 of tarsus.

Abdomen 1.50 times longer than wide; eighth urotergite with a pair of spiracles with moderately large, rounded peritremes; ninth with a pair of small pseudocerci, each with a seta; genital armature with a pair of ventral, flattened processes, each with a pair of setae at their distal extremities, and 2 dorsal, depressed, distally dilated appendages, each with 3 short, stout odontoid spines; penis exserted, sublanceolate.

Type locality Dehra Dun

Host Fig of *Ficus cunia* Hann.

Philotrypesis tridentata Joseph

1954 *Philotrypesis tridentata,* Joseph, *Agra Univ. J. Res.* (Sci.) 3 : 90.

Female : Length 3.20 mm. Head, thorax and abdomen yellowish-brown; mandibles brownish-red; antennal segments 2-13, ovipositor smokey-brown; eyes and ocelli coralline; wings hyaline; abdomen above each tergite with a large brownish-black band; tail-like part of abdomen brownish-black above.

Head distinctly wider than long; lateral margin of head forwards of eyes 0.62 of eye, somewhat rounded and converging forwards; posterior margin behind eyes broadly rounded; eyes large; ocelli 3; dorsum with a few short setae; anterior, genal and posterior regions of the cranium rugulose; antenna with 13 segments, of which 3 form annelli; scape 5 times as long as thick and distinctly longer than following 5 segments combined; second segment 1.80 times longer than thick; 3-5 form annelli; sixth about 1.50 times as long as thick; seventh a little longer and thicker than sixth; eighth and ninth equal, shorter than sixth; tenth shorter than ninth but thicker; segments 11-13 form a club of length 2 times its maximum thickness; segments 6-13 with short and stout, long and slender sensoria and long setae; mandible a little less than 1.50 times as long wide, tridentate at apex; maxillary palpus with 4 and labial palpus with 2 segments.

Pronotum short, lateral margins diverging posteriorly; scutum transversely rugulose, distinctly wider than long, with short setae; scapula transversely rugulose, a little wider than long; scutellum flat, wider than long, with a few very short setae; axilla a little longer than wide, obliquely rugulose, with a few short setae in posterior angle; thorax and propodeum less than 1.50 times breadth, distal extremity rounded; costal cell about 10 times as long as wide; veins *sm m pm : st* ratio 70 : 42 : 30 : 10; fore coxa a little over 2 times as long as wide, transversely rugose; femur large, a little over 2.50 times as long as wide, longitudinally weakly rugulose, shorter than

coxa and trochanter combined; tibia subequal to coxa, a little less than 5 times as long as wide, with 2 odontoid spines on outer face apically; tarsi 0.66 of tibia; metatarsus equal to following 2 segments combined; middle coxa a little longer than wide, transversely and obliquely rugulose; trochanter 2 times as long as wide; femur 6 times as long as width, obliquely weakly rugulose; tibia long, a little shorter than trochanter and femur combined, longitudinally weakly rugulose, 10 times as long as width, with setae, spines and spur; tarsi distinctly shorter than tibia; metatarsus equal to following 2 segments combined; hind coxa a little over 2 times as long as wide, obliquely rugulose, outer face with 5 macrochetae; femur about 3.50 times as long as width, longitudinally weakly rugulose; tibia a little longer than femur, about 5.75 times as long as width, longitudinally weakly rugulose with long setae, odontoid spines and apical spurs; tarsi hardly as long as tibia; metatarsus a trifle shorter than following 2 segments combined; width of propodeum a little less than 3 times maximum length, obliquely weakly rugulose, with setae and a pair of spiracles with small rounded peritremes.

Abdomen upto seventh tergite 1.66 times its height; sixth and seventh urotergites with a few long setae; eighth and ninth with long and strong setae; tail-like part of abdomen a little longer than seventh tergite; eighth urite short, 0.60 of abdomen upto seventh tergite; ninth about 0.66 of eighth; ovipositor comparatively short, its projecting part longer than the length of urites 2-9; ovipositor strongly setiferous, much swollen at tip.

Type locality : Dehra Dun

Host : Figs of *Ficus benjamina* Linn.

Otitesella Westwood

1883 *Otitesella,* Westwood, *Trans. ent. Soc. London,* 39.
1904 *Otitesella,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 240.
1909 *Otitesella,* Schmiedeknecht, *Gen. Ins.,* 97 : 97.
1922 *Otitesella,* Grandi, *Boll. Lab. Zool. Portici,* 15 : 12.
1938 *Otitesella,* Mani, *Cat. Indian Ins.,* 23 : 38.
1964 *Otitesella,* Joseph, *Proc. R. ent. Soc. London,* (B) 33 : 65.
1967 *Otitesella,* Wiebes, *Tijds. Ent.,* 100 : 435, 436.
1967 *Otitesella,* Hill. *J. Nat. Hist.,* 1 : 424.

Male : Tarsi with only 4 segments, unlike in all other genera; head elongate-quadrate; margined in front and behind; ocelli absent; antennae with 8 or 9 segments, without annellus, inserted far above the middle of face; scape, large, stout, clavate; mandibles projecting, nearly as long as head, bidentate at tip, in the middle of inner margin with another tooth; wings reduced to filaments.

Type-species : Otitesella digitata Westwood.

Otitesella digitata Westwood

(Fig. 33)

1883 *Otitesella digitata,* Westwood, *Trans. ent. Soc. London,* 40, Pl. vii.
1883 *Otitesella religiosa,* Westwood, *Trans. ent. Soc. London,* 40.
1909 *Otitesella digitata,* Schmiedeknecht, *Gen. Ins.,* 97 : 98.
1921 *Otitesella digitata,* Grandi, *Ann. Mus. Civ. Stor. Nat. Genova,* 49 : 308.
1922 *Otitesella digitata,* Grandi, *Boll. Lab. Zool. Portici,* 16 : 12.
1938 *Otitesella digitata,* Mani, *Cat. Indian Ins.,* 23 : 38.
1967 *Otitesella digitata,* Wiebes, *Tijds. Ent.,* 110 : 402.

Westwood : *O. digitata :*

"Mas. Tota fùlva; mandibulis margine interno in medio rotundato emarginatis, tarsis omnibus articulo 4to maximo ovali et in pedibus 4 posticis nigro, retinaculis 4 denticulatis; alis rudimentaribus e stylo tenui biarticulato apice longisetigero et vix mesonoto longiori formatis. Long corp. circ. 2 mm"

Westwood : *O. religiosa :*

"Mas. Parva. Testo luteo-fulva; subaptera, capite subquadrato, angulis anticis et posticis rotundatis; pronoto transverso, breviori, subquadrato, angulis posticis setis nonnullis longis instructis; alis duabus rudimentarus longitudine pronoti e filamente tenui cylindrico 6-articulato formatis; articulis 4 ultimis seta longa, extus instructis; abdomine basi matanoto angustiori, pedibus brevibus, robustis, tarsorum articulis tribus basalibus brevibus, ultimo crasso, subclavato; mandibulis robustis, porrectis apice acutis, extus ante apicum dente truncato instructis; margine interno in medio in lobum latum planum intus dilatato; retinaculis latis 5 dentatis. Long corp. circ. 2 mm.

Female : Length 1.20-1.80 mm. Body generally brown, with a greenish-metallic; antennae and legs yellowish, hind coxae with a brownish base.

Differs from *Micranisa pteromaloides* (Walker) in the following characters : Head shorter than wide; epistomal margin with a median prominence; distance between toruli 0.66 of their distance to inner orbital mrgin; antenna with 12 segments, 2 of which annelliform; in axial aspect, sensilla less rugularly distributed than in *M. pteromaloides,* and not all setae basal; length of 4 segments of maxillary palpi rather variable; in large specimens, apical segment approximately 3 times as long as subapical, but is scarcely 2 times as long in smaller examples.

Pronotum short; parapsidal furrows obsolete for posterior 0.50; scutellum subcircular in outline; fringe of fore wing very short; hind leg only the coxa brownish at base, femur concolorous with tibia and tarsus.

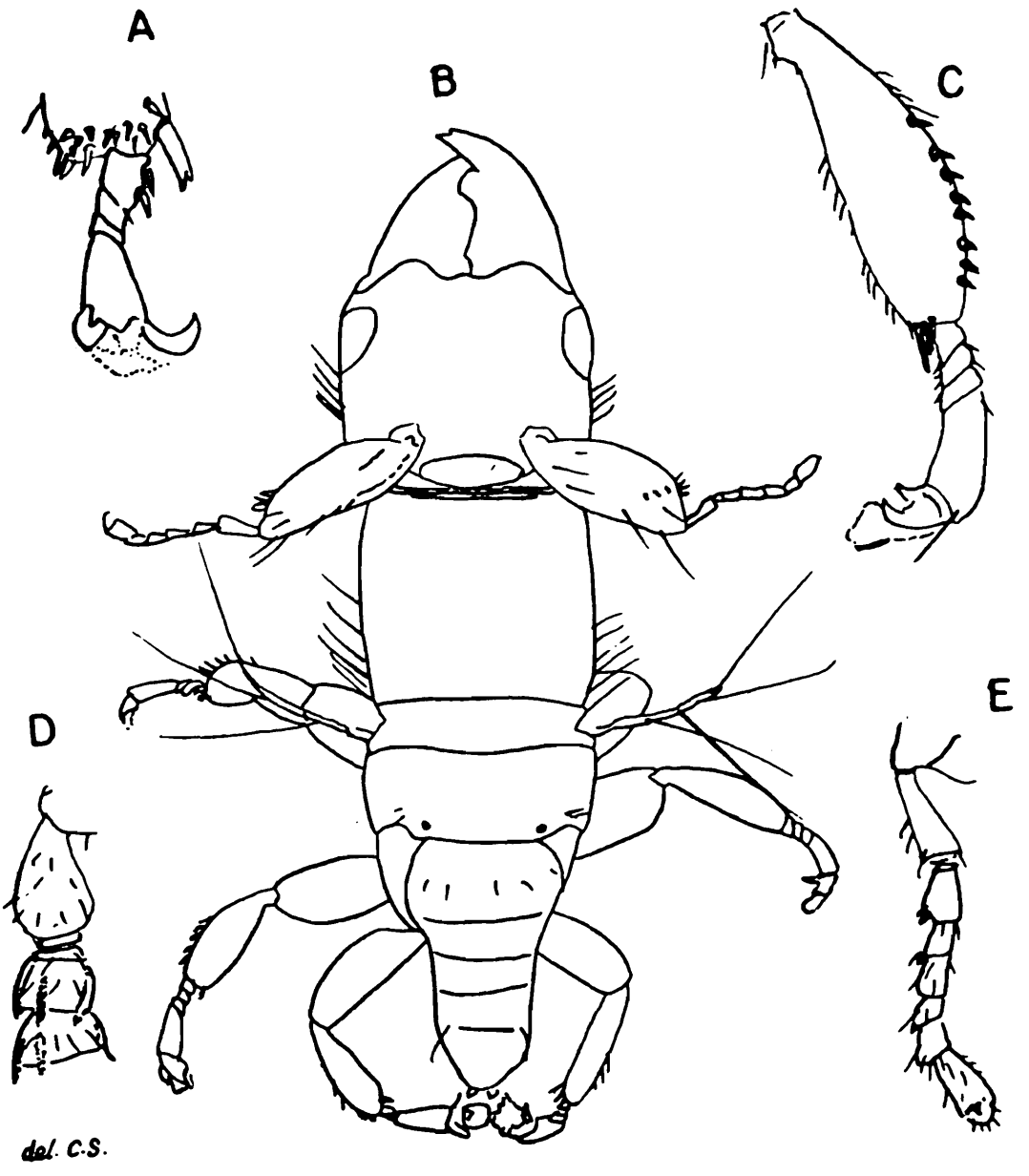

FIG. 33. *Otitesella digitata* Westwood : A. Apex of fore tibia and tarsus, male; B. Dorsal aspect of body, male; C. Middle tibia and tarsus, male; D. Part of antenna, female; E. Antenna, male.

Male : Length 1.20 mm. Body generally uniform yellowish-brown. Head slightly wider than long; antenna with one annellus; segments 4, 6 and 8 with a triangular, antiaxial sensillum.

Pronotum a little wider than long, with long lateral setae; mesonotum short, constricted medially; metanotum incompletely fused with propodeum, their combined length nearly 2 times mesonotum; wing remnant long, with several long setae; legs much like those of *O. digitata,* but for tarsi (apical segment not swollen) and armature of tibiae; fore tibia with many ventral spines, robust bifid spur, and long spines over almost whole length of dorsal margin; mid leg with one tibial spur accompanied by 2 antiaxial and

2 axial spines, with a row of small spines along dorsal margin; hind leg similar to mid leg, but with more ventral spines, and with several rows of spines along distal 0.50 of dorsal margin.

Remarks *Otitesella digitata* Westwood and *O. religiosa* Westwood are 2 forms of polymorphic species.

Type locality Ceylon : Taprobana
Distribution Ceylon; India : Pusa
Host Figs of *Ficus religiosa* Linn.

Otitesella minima Joseph

1956 *Otitesella minima,* Joseph, *Ann. Soc. Ent. France,* 125 : 126.
1956 *Terastiozoon sanctijohani,* Joseph, *Ann. Soc. Ent. France,* 125 : 124.
1967 *Otitesella minima,* Wiebes, *Tijds. Ent.,* 110 (13) : 440.

Male Length 1.06 mm, 1.25 mm and 1.75 mm in the 3 forms described by Joseph. Body generally rusty yellowish-brown. Head 1.33 times as wide as long; antennae inserted widely apart well behind in the posterior 0.33 of head; dorsum with a triangular furrow; antenna with 10 segments : 1.1.1.5.2; scape large, compressed, about 2.66 times as long as wide; pedicel about 2.50 times as long as thick; segments 9-10 form club about 2.66 times longer than thick; pronotum 2 times as wide as long, margins converging behind; fore coxa large, 1.66 times as long as wide; femur compressed, 2 times as long as wide; tibia 0.80 of femur and 2.66 times as long as thick; with about 20 odontoid spines; fourth tarsal segment a little less than 2 times metatarsus; hind coxa a little longer than 2 times its width; femur 2 times longer than wide; tibia a little shorter than femur, with about 10 odontoid spines and paired spurs; fourth tarsal segment 1.66 times metatarsus; abdomen subdepressed, 1.50 times as long as wide; genital armature with each of its 2 dorsal appendages bearing 3 odontoid spines and each of the 2 ventral processes with a long seta distally; penis sublanceolate.

Female : Length 1.30 mm. Body iridescent green-blue; antennae smoky-brown. Head about 1.25 times as wide as long; margin in front of eyes about 0.40 of eye; intertorular space subequal to oculotorular space; V-shaped furrow on dorsum behind toruli; antennae with 12 segments : 1.1.2.6.3; scape 4.50 times as long as thick; pedicel a little less than 1.50 times as long as thick; segments 10-12 form club a little less than 2 times as long as thick; mandible tridentate; mesonotum about 1.50 times as wide as long; scutellum a little wider than long; propodeum about 3 times as wide as long; fore wing about 2.20 times as long as wide; vein *sm* slightly more than 2 times *m,* which is a little longer than *pm; st* a little longer than 0.50 of *pm;* fore femur 3.50 times as long as wide; tibia 0.75 of femur and about 4 times longer than thick, with 2 odontoid spines; metatarsus about 0.40 of tarsus; hind coxa about 2.33 times as long

as wide; tibia a little longer than femur, with about 14 odontoid spines and paired spurs; metatarus a little less than 0.50 of tarsus; abdomen with the ovipositor slightly projecting.

Type locality Agra.

Host : Figs of *Ficus infectoria* Roxb.

Walkerella Westwood

1883 *Walkerella,* Westwood, *Trans. ent. Soc. London,* 39.
1904 *Walkerella,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 240.
1909 *Walkerella,* Schmiedeknecht, *Gen. Ins.,* 97 : 97.
1921 *Walkerella,* Grandi, *Ann. Mus. Stor. nat. Genova,* 49 : 312.
1967 *Walkerella,* Wiebes, *Tijds. Ent.,* 110 : 438.

This genus differs from *Sycobiella* Westwood in the antennae being inserted in the middle of face; head large; transverse elliptical, bulging in front, margined behind; antennae with 9 segments including one annellus; inserted closer together than to orbital border, scape very large, dilated, subclavate; mandibles wide and tridentate basally and bidentate apically; wings wholly absent, not even represented by filaments. Known only as male.

Type-species : Walkerella temeraria Westwood.

Walkerella temeraria Westwood

(Fig. 34)

1871 *Sycobio bethyloides,* Walker, *Notes Chalcids,* 4 : 61.
1871 *Sycobia bethyloides,* Walker, *Trans. ent. Soc. London,* 31.
1883 *Walkerella temeraria,* Westwood, *Trans. ent. Soc. London,* 32, pl. iv.
1909 *Walkerella temeraria,* Schmiedeknecht, *Gen. Ins.,* 97 : 97.
1925 *Walkerella temeraria,* Ramakrishna Ayyar, *spol. Zeyl.,* 13 : 242.
1938 *Walkerella temeraria,* Mani, *Cat. Indian Ins.,* 23 : 37.
1938 *Sycobia bethyloides,* Mani, *Cat. Indian Ins.,* 23 : 38.
1957 *Terastichozoon keralensis,* Joseph, *Ann. Soc. ent. France,* 125 : 124-126.
1966 *Tetrastichozoon keralensis,* Wiebes, *Tijds. Ent.,* 109 : 165.
1967 *Walkerella temeraria,* Wiebes, *Tijds. Ent.,* 110 : 401. 402.

"Characters masculini tantum descripti. Corpus parvum breve apterum. Caput magnum depressum transverse ellipticum, angulis rotundatis; pronoto latius; oculis parvis lateralibus, margine antico capitis in medio parum depresso. Ocelli o. Antenne in medio capitis insertae, basi approximate, articulo 1mo maximo dilatato, basi angustoto, 2ndo parvo angusto, 3tio subclavato, annuliformi, 5 proximo minutis aequalibus ultimo (nono) proecedenti paullo majori ovali, et ut videtur exarticulato. Mandibulae elongatae porrectae falcatae, basi dilalato et denticulato, apice bifidae, trophi religm, obsoleti pronotum magnum capite angustius transverso-quadratum,

mesonotum exarticulatum (?) transversum, metanotum angustus, parum transversum, postice rotundatum. Abdomen angustum, thoracis longitudine, apice genitalibus stylum gracilem formatibus, prope apicem retinaculis duobus 4 dentatis (Cercis apicalibus Walker), instructis. Pedes satis elongati et graciles, intermedio parum minores, femoribus entices paullo incrassatis; tibiis subdilatatis; tarsis omnibus articutis 5 sat gracilibus instructis"

"Testacea lutea. Mandibulis fulvis. Long. Corp. 1 len.

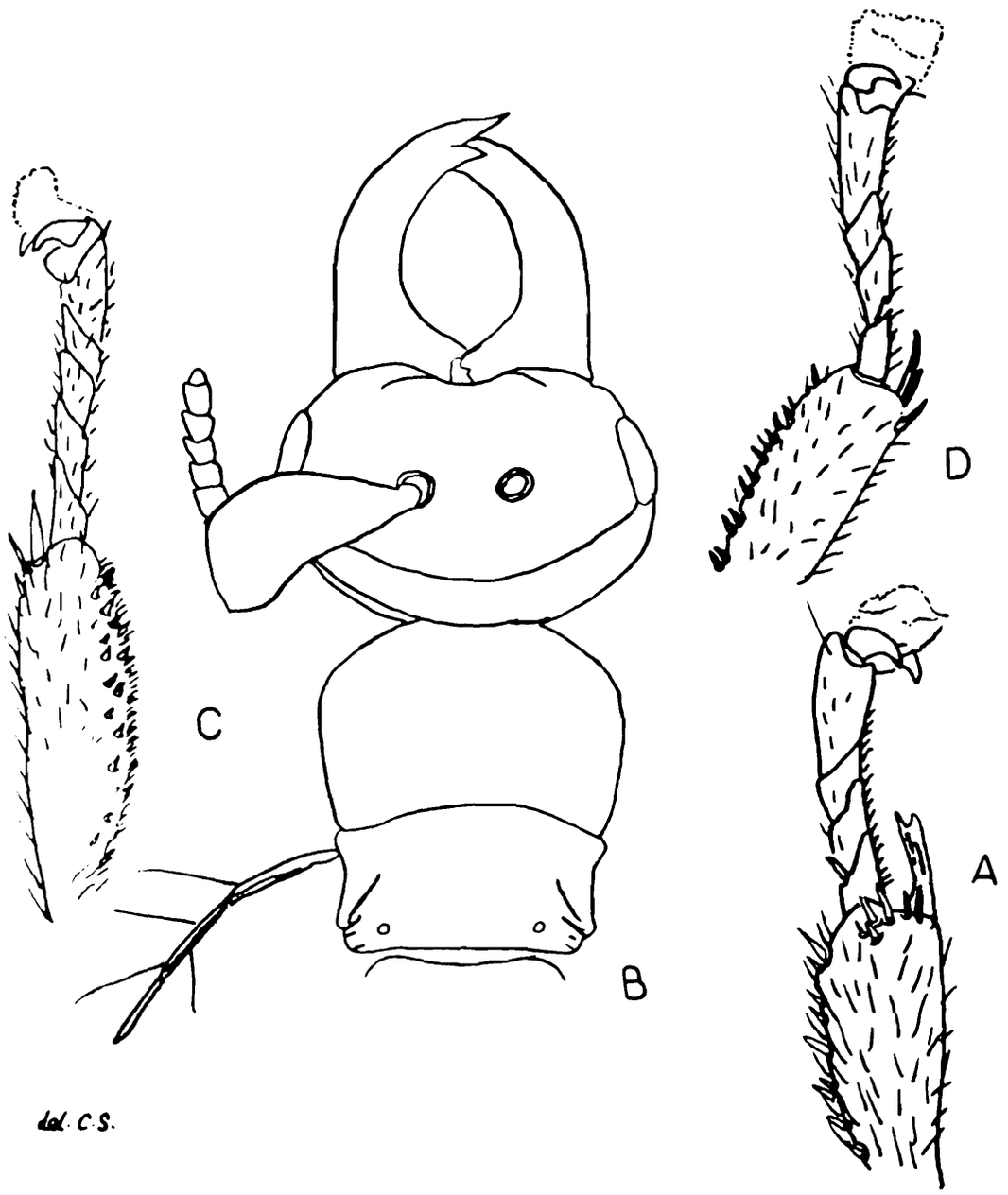

FIG. 34. *Walkerella temeraria* Westwood, male : A. Apex of fore tibia and tarsus; B. Dorsal aspect of head and thorax; C. Hind tibia and tarsus; D. Distal half of middle tibia and tarsus.

Antenna with 10 segments; one annellus; propodeum partly separated from mentanotum; dents at lateral edges of thoracic dorsum just posterad of the place of insertion of wing remnant,

indicate boundary between meso- and metanotum; fore tibial armature rather long spines along distal 0.50 of dorsal margin, a group of 5-6 unequal spines at antiaxial apex, 4 spines in ventral angle antiaxiad of bifid ventral spur, one axial spine close to spur, one spine (next to 2 stout setae) at axial apex; middle leg with 5 antiaxial spines and stout setae and 2 axial spines, occur at ventral angle of tibia, close to simple ventral spur; hind leg 6 spines, all of which visible in antiaxial aspect, accompany the simple tibial spur; axial apex of tibia bears a row of setae; all tarsi have 4 segments.

Type locality : Calcutta

Distribution : Calcutta, Pusa, Trivandrum

Host : Fig of *Ficus religosa* Linn. and *F. bengalensis* Linn.

The following description of the male is summarized from Joseph :

Male : Length 2.40 mm; body generally yellowish-brown; head a little less than 1.50 times as wide as long; intertorular space about 0.80 of oculotorular space; scape about 2 times as long as wide; pedicel a little less than 2.50 times as long as thick; segments 9-10 form club; mandibles a little less than 2.50 times longer than wide, longer than head, falcate, bidentate and with 3 dentiform processes basally; pronotum a little over 1.50 times as wide as long; mesonoto-metanoto-propodeum 2 times as wide as long; fore wing as long as pronotum; fore coxa a little less than 2 times as long as wide; femur subcompressed, over 2 times longer than wide; tibia subclaviform, a little less than 3.50 times as long as wide, with about 24 odontoid spines; hind coxa 2.75 times as long as wide; tibia slightly longer than femur, with about 18 odontoid spines; fourth tarsal segment longest; abdomen longer than wide, subdepressed; genital armature with each of the 2 dorsal appendages with 4 odontoid spines at tip and each of the ventral processes with 2 setae; penis sublanceolate.

Walkerella benjamini (Joseph)

(Fig. 35)

1956 *Terastiozoon benjamini,* Joseph, *Ann. Soc. Ent. France,* 125 : 119.

Female 2.10 mm. Body iridescent blue-green; scape yellowish-brown; rest of antenna brown; legs mostly yellow; head distinctly wider than long; margin in front of eyes about 0.33 eye; antennae inserted close together in the middle of dorsum of head; dorsum reticulate; antennae with 12 segments : 1.1.2.5.3; scape about 5.75 times as long as wide; with a short and small laminate expansion; pedicel a little less than 1.50 times as long as thick; segments 3-12 as in figure; segments 10-12 form club; mandible 1.50 times as long as wide, tridentate; maxillary palpus with 4 and labial palpus with 2 segments; thorax closely reticulate; scutum longer than 0.50 of width;

parapsidal furrows complete; scutellem a little wider than long semicircular; propodeum about 4 times as wide as long; fore wing about 2.60 times longer than wide; vein *sm* 2.33 times *m, pm* about 0.50 of *m* and subequal to *st;* fore femur a little over 3 times as long as wide; tibia 4.33 as long as wide, with a long bifid spur and 6 distal odontoid spines; tarsus about 0.66 of tibia; metatarsus shorter than the following 2 segments combined; hind coxa 2 times as long as wide; femur a little more than 3 times as long as wide; tibia 4.33 times longer than wide; with about 12 odontoid spines; metatarus about 0.50 of tarsus; tenth urite of abdomen small and membranous; ovipositor protruding a little beyond tip of abdomen.

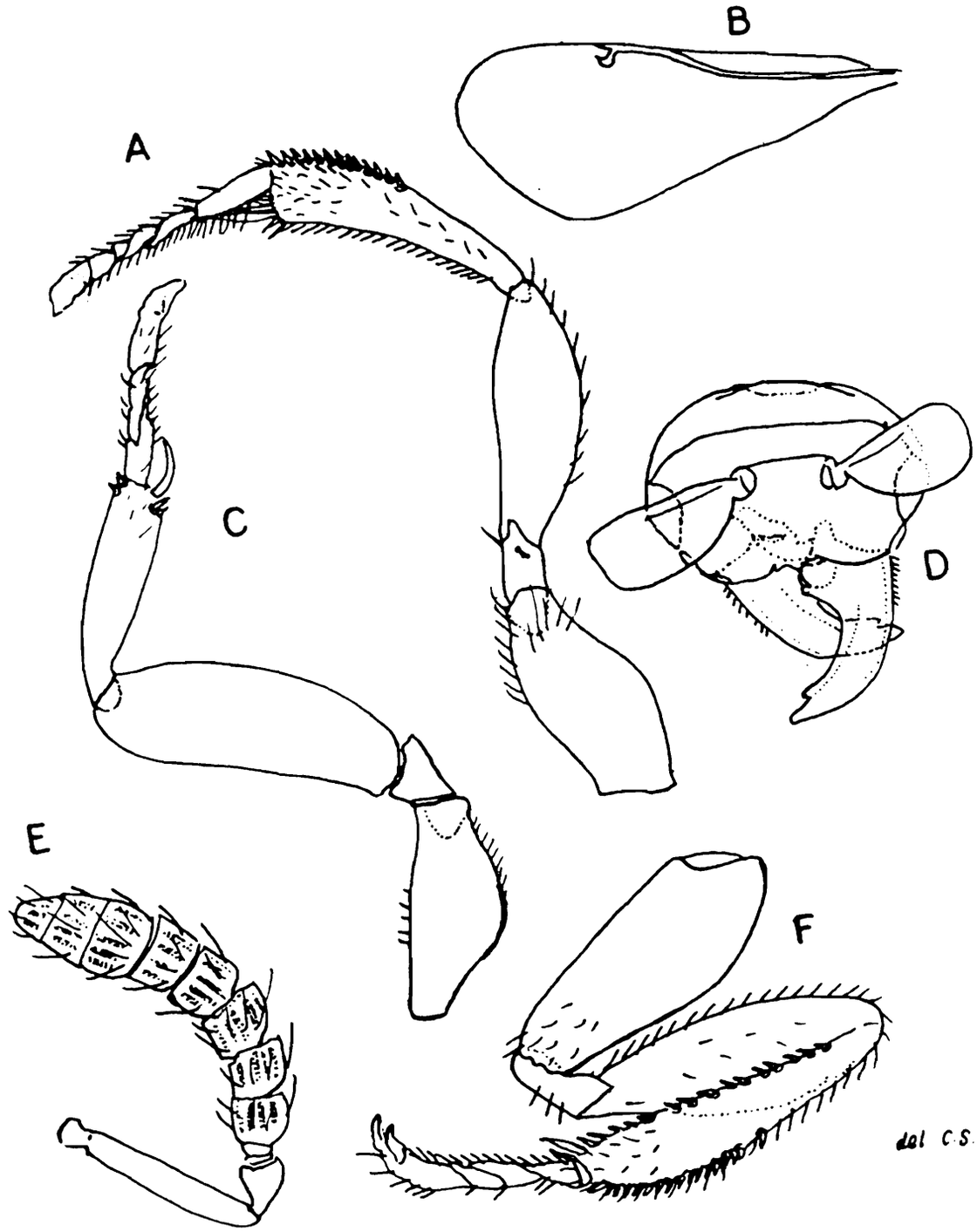

FIG.35. *Walkerella benjamini* (Joseph) : A. Hind leg, female; B. Fore wing, female; C. Fore leg, female; D. Head and mandible, male; E. Antenna, male; F. Hind leg, male. *(Modified from Joseph).*

Male 3 distinct forms are described by Joseph : Lengths 3.00 mm, 2.48 mm and 2.00 mm. Body generally yellowish-brown; head less than 1.33 times as wide as long; divided into an anterodorsal area with antennae and eyes and a posteroventral part with the mouthparts; antennae with 10 segments : 1.1.1.5.2; scape large, massive, compressed, 3 times as long as wide; pedicel about 2.50 times longer than thick; segments 9-10 form club; mandible large, longer than head; bidentate; pronotum subquadrate; mesonotum, scutellum and propodeum fused together; fore coxa 1.66 times longer than wide; femur large, about 2.33 times longer than wide; tibia a little longer than femur, about 4 times as long as wide, with about 20 odontoid spines; hind coxa about 2.75 times longer than wide; femur long, 3 times longer than wide; tibia a little longer and with about 17 odontoid spines; tarsus with 4 segments; abdomen depressed; genital armature with its 2 dorsal appendages rounded apically and with 4 odontoid spines; ventral processes pointed, with a long and a short seta each; penis long, sublanceolate.

Type locality : Dehra Dun

Host : Figs of *Ficus benjamina* Linn.

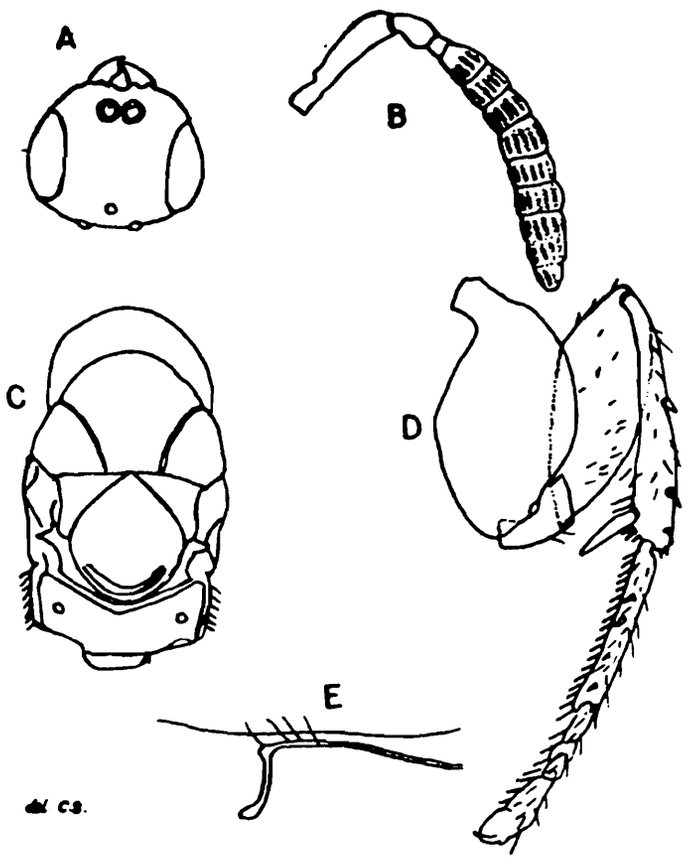

FIG. 36. *Walkerella mathewi* (Joseph) female : A. Head; B. Antenna; C. Thorax; D. Hind leg; E. Veins *sm* and *st. (Modified from* Joseph).

Walkerella mathewi (Joseph)

(Fig. 36 & 37)

1956 *Sycobia mathewi,* Joseph, *Ann. Soc. Ent. France,* 125 : 130.

Female Length 3.70 mm; body generally yellowish-brown. Head about 1.25 times as wide as long; margin in front of eyes a little less than 0.50 of eye; antenna with 12 segments: 1.1.1.6.3; scape about 3.50 times longer than thick; pedicel 1.50 times longer than thick; club slightly less than 2 times longer than thick; pronotum 1.50 times as wide as long; scutum 1.25 times as wide as long; scutellum a little longer than wide; fore wing about 2.80 times longer than wide; vein *sm* 4 times *m; pm* absent; *st* about 0.66 of *m;* fore coxa less than 2.50 times longer than wide; femur 2.50 times longer than thick; tibia a little shorter; metatarsus shorter than 0.33 of tarsus; hind coxa less than 2 times as long as wide; femur shorter than coxa; tibia a little over 5 times longer than thick, with 6 odontoid spines and double spurs; fifth tarsal segment about 0.40 of metatarsus; abdomen subcompressed; urite 9 with a pair of cercoids, each with 3 bristles apically; ovipositor hardly exserted.

Male : Length 3.70 mm; body generally yellowish-brown; head subquadrate; antennae inserted close together on epistomal margin, with 11 segments : 1 1.6.3; scape about 2.80 times as long as thick; pedicel about 2.50 times longer than thick; pronotum about 1.25 times as long as wide; scutum as long as wide; scutellum subrhomboid; fore wing less than 3 times longer than wide; vein *sm* a little over 4 times *m;* vein *pm* rudimentary; *st* shorter than *m;* hind

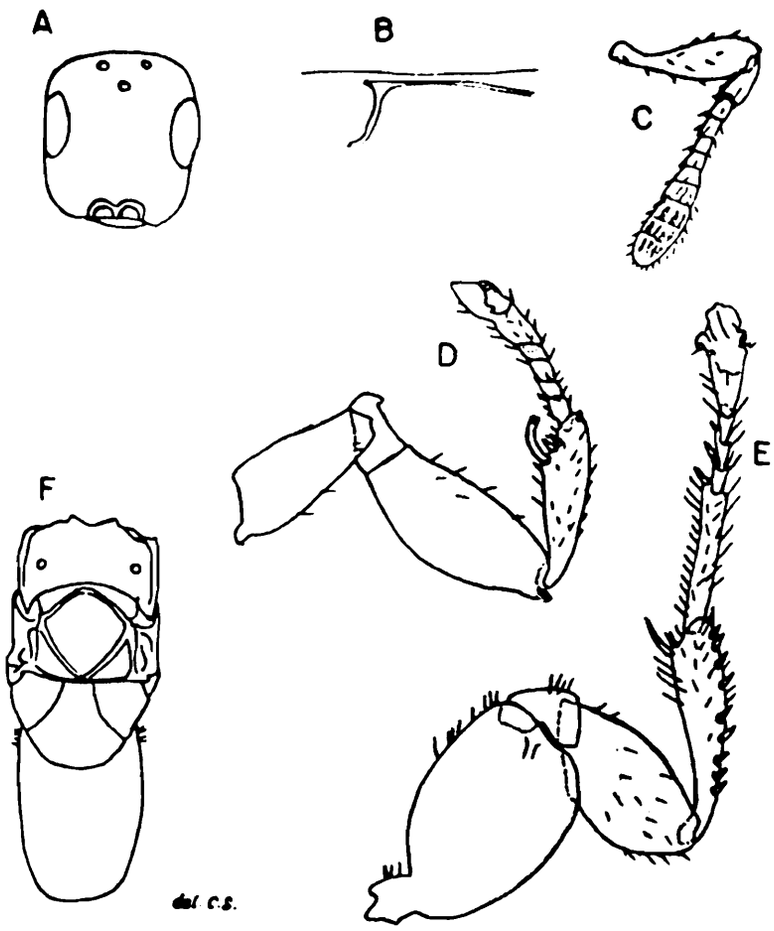

FIG. 37 *Walkerella mathewi* (Joseph), male : A. Head; B. Veins *sm* and *st;* C. Antenna; D. Fore leg; E. Hind leg; F. Thorax. *(Modified from* Joseph).

coxa a little less than 1.75 times longer than wide; femur a little less than 2 times as long as thick; tibia about 1.20 times femur; with about 12 odontoid spines; metatarsus slightly more than 0.50 of tarsus; second urite forming a distinct petiole; urite 9 with paired digitiform cercoids bearing paired setae; genital armature with its 2 dorsal appendages with 4 odontoid spines apically and ventral processes long, flat, with 4 odontoid spines; penis sublanceolate.

Type locality : Thalakvadi (Belgaum).

Host : Figs of *Ficus mysorensis* Hayne.

Micranisa Walker

1871 *Idarnes* (partim), Walker, *Notes Chalcids.*, 4 : 63.
1875 *Micranisa,* Walker, *Entomologist,* 8 : 18.
1883 *Sycobiella,* Westwood, *Trans. ent. Soc. London,* 33.
1904 *Sycobiella,* Ashmead, *Mem. Carnegie Mus.*, 1(4) : 240.
1909 *Micranisa,* Schmiedeknecht, *Gen. Ins.*, 97 : 93.
1909 *Sycobiella,* Schmiedeknecht, *Gen. Ins., 97 : 97.*
1938 *Sycobiella,* Mani, *Cat. Indian Ins.*, 23 : 37.

Male : Head large, margined in front and behind, lateral margin incised behind and projecting like a tooth before the posterior angle; antenna with 10 segments, including 2 annelli, inserted far from each other in the middle of face; scape large, expanded deeply, incised at base below; mandible stout, bidentate apically and with base produced and tridentate; wings reduced to filaments.

Type-species : Micranisa pteromaloides (Walker)

Micranisa pteromaloides (Walker)

(Fig. 38)

1871 *Idarnes pteromaloides,* Walker, *Notes Chalc.*, 4 : 63.
1875 *Micranisa pteromaloides,* Walker, *Entomologist,* 8 : 15.
1883 *Sycobiella saundersi,* Westwood, *Trans. ent. Soc. London,* 34.
1898 *Micranisa pteromaloides,* Dalla Torre, *Cat. Hymen.* 5 : 317.
1909 *Micranisa pteromaloides,* Schmiedeknecht, *Gen. Ins.*, 97 : 94.
1909 *Sycobiella saundersi,* Schmiedeknecht, *Gen. Ins.*, 97 : 97.
1938 *Sycobiella pteromaloides,* Mani, *Cat. Indian Ins.*, 23 : 37.
1938 *Sycobiella saundersi,* Mani, *Cat. Indian Ins.*, 23 : 37.
1967 *Micranisa pteromaloides,* Wiebes, *Tijds. Ent.*, 110 : 105.

Female : Length 1.80 mm. Body generally shiny metallic bluish-black; antennae, mouth parts and legs yellowish, coxae dark brown, hind femora with light brown patch on antiaxial discs.

Head length : width ratio 3 : 4; toruli in the middle of face, shallow longitudinal groove from mouth to front ocellus; space between toruli 0.66 of distance to inner orbital margin; epistomal

margin with 2 prominent lobes; antenna with 13 segments; annelli 3; club 3 segmented; scape 5 times as long as wide; pedicel 0.33 of scape; segments 7-10 subequal, with regular whorls of oblong sensilla, and long basal setae; labial palpi with 2 subequal segments; maxillary palpi segments ratio 5 : 4 : 2 : 10; mandible tridentate, with 3 glands.

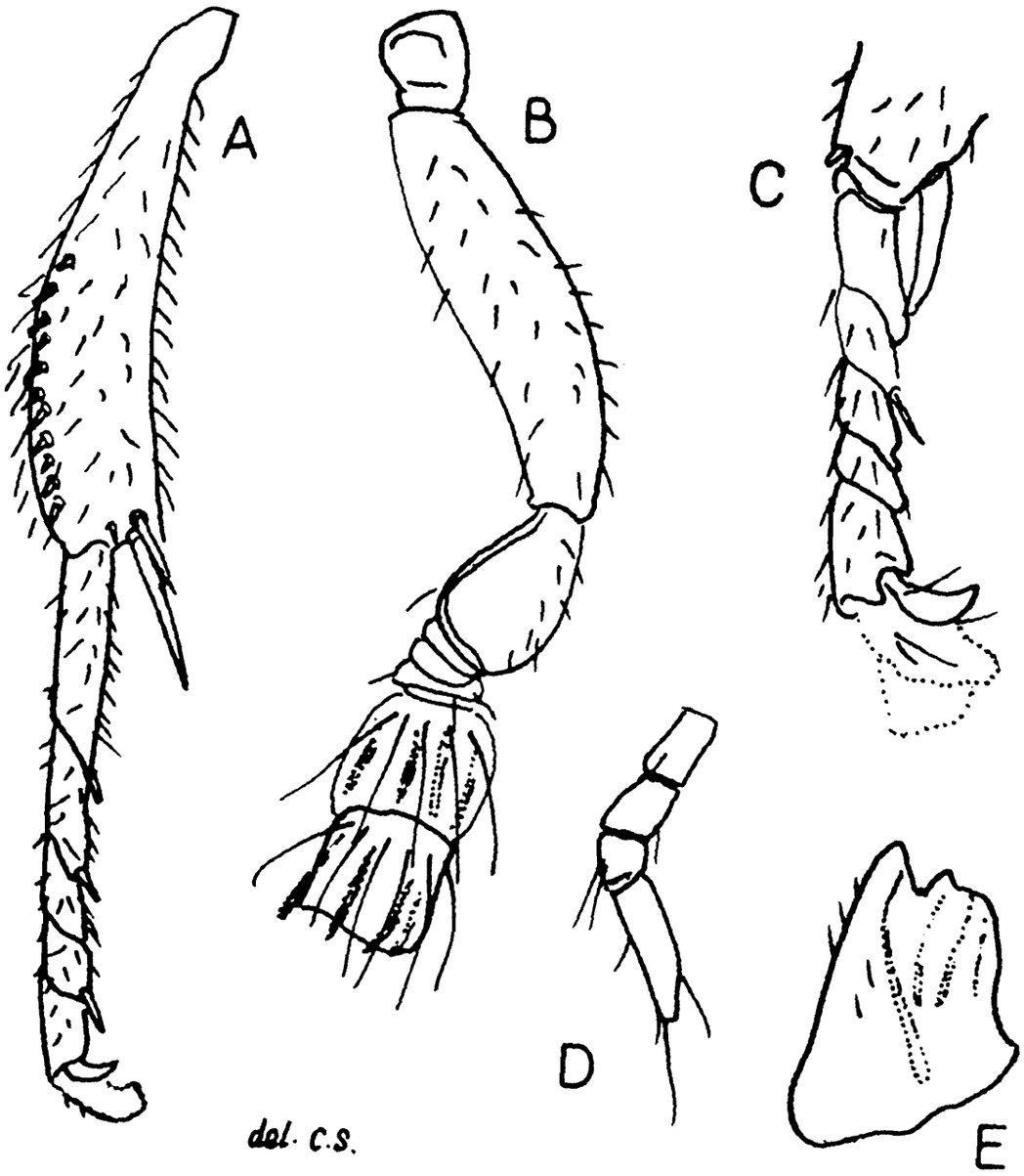

FIG. 38. *Micranisa pteromaloides* (Walker), female : A. Hind tibia and tarsus; B. Antenna, proximal segments; C. Apex of fore tibia and tarsus; D. Maxillary palpus; E. Mandible.

Pronotum short, only the lateral parts visible dorsally; scutellum large, parapsidal furrows complete; scutellum wider than long; propodeum short medially, widening lateral, with 8 long setae next to circular spiracular peritremata; fore wing 2 times as long as broad; veins *sm m : st : pm* ratio 22 : 10 : 6 : 7, vein *sm* with 2 pustules, *st* with 4; wings hyaline, with microtrichae in distal 0.66, with some stouter setae along veins *m, pm* and with 2-3 large setae in front

of *sm;* fringe very short; hind wing 3 times longer than broad, with microtrichae as in fore wing; fore coxa, femur and tibia (faintly) reticulate and rather sparse setae; femur as long as tibia and first 2 tarsal segments combined; apical armature of tibia 2 spines at dorsal angle and several stout setae next to long, bifid ventral spur; tarsal segments ratio 6 : 4 : 4 : 3 : 7, except fifth with a pair of ventro-apical spines; metatarsus with ventral spines; middle tibia as long as femur and trochanter combined, with one ventral spur; tarsal segments ratio 15 : 5 : 4 : 4 : 3, with a pair of stout ventro-apical spines; hind coxa nearly as long as femur, reticulate and with 8 long setae in dorso-apical axial angle; femur reticulate, antiaxial disc with scartered setae, axial with a longitudinal row of setae; tibia slightly longer than femur, pubescent anti-axially, less distinctly so axially, with a row of spines along distal 0.50 of dorsal margin and with stout dorsal and ventral margin setae, ventro-apical armature of 2 unequal spurs and a few anti-axial spines, a row of slender spines along the axial, apical margin; tarsal segments ratio 12 : 6 : 4 : 3 : 5, first 4 with a pair of stout ventro-apical spines.

Pygostyles of 9 urotergite with 4 long setae; valve and ovipositor short.

Type locality : "India" : Calcutta

Distribution : Calcutta, Allahabad, Trivandrum

Host : Figs of *Ficus bengalensis* Linn.

Gen. et. Species Incertae Sedis

Sycobiella Westwood

1883 *Sycobiella,* Westwood, *Trans. ent. Soc. London,* 330.
1904 *Sycobiella,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 204.
1909 *Sycobiella,* Schmiedeknecht, *Gen. Ins.,* 97 : 97.
1938 *Sycobiella,* Mani, *Cat. Indian Ins.,* 23 : 37.

Head sinuate in front and behind, with the posterolateral angle dentate; wings filamentous; antennae with 10 segments including 2 annelli; scape dilated; tarsi with 5 segments.

Type-species : Sycobiella saundersi (Westwood)

Sycobiella claviscapa Joseph

(Fig. 39)

1956 *Sycobiella claviscapa,* Joseph, *Ann. Soc. Ent. France,* 125 : 127.

Male : Length 2.40 mm. Body generally yellowish-brown; head about 1.50 times as wide as long; antennae inserted far wide apart sublaterally on head, with 11 segments : 1.1.2.5.2; scape large, compressed, 2 times as long as wide; pedicel subcylindrical, about 2.75 times as long as thick; mandible bidentate apically, with 2 small

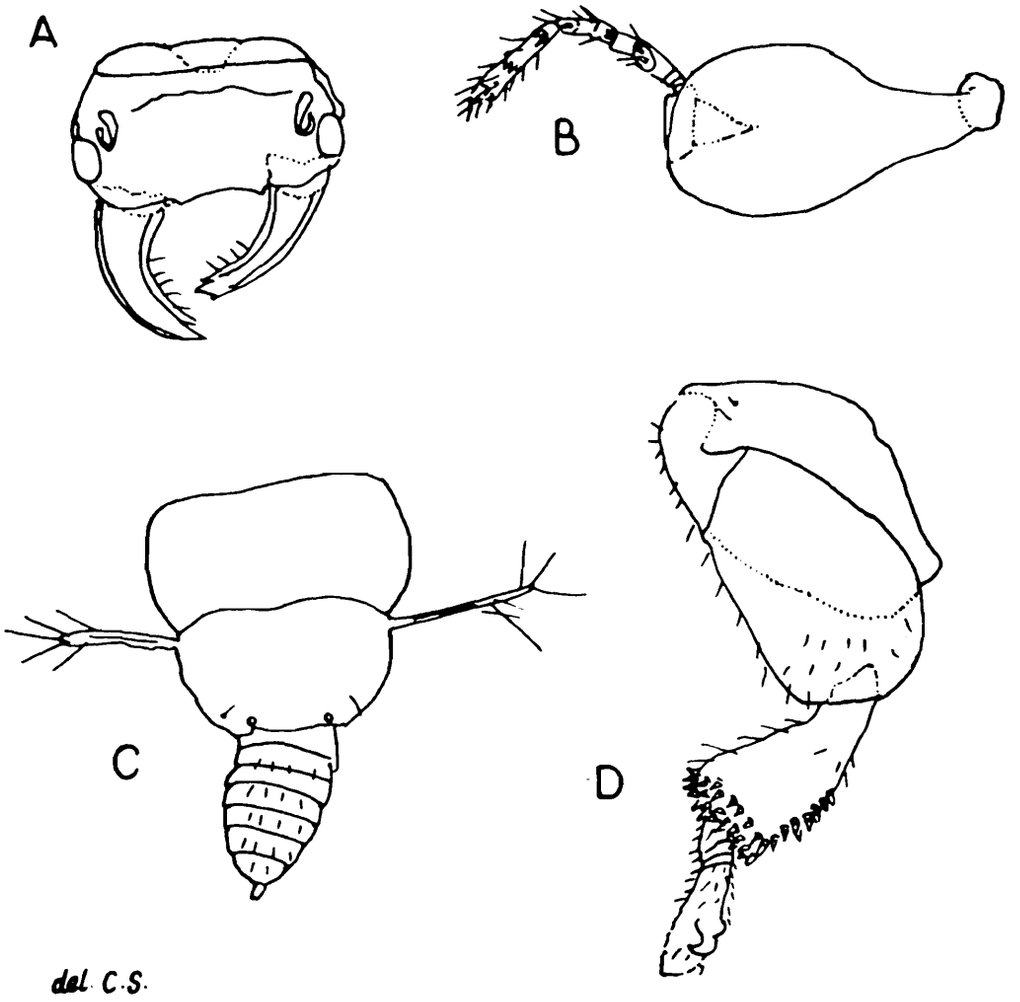

FIG. 39. *Sycobiella clasviscapa* Joseph, male : A. Head and mandible; B. Antenna; C. Thorax and abdomen; D. Fore leg. *(Modified from* Joseph).

dentate processes basally; pronotum large, subquadrate, 1.66 times as wide as long; mesonotum, mentotum and propodeum fused together; fore wing a little shorter than head; fore coxa about 1.50 times longer than wide; femur stout, a little shorter than coxa; tibia longer than 0.66 of femur, with about 33 odontoid spines; fourth tarsal segment about 0.33 of metatarsus; hind coxa a little less than 1 75 times as long as wide; femur about 1.66 times longer than thick; tibia longer than femur; with about 23 odontoid spines; fourth tarsal segment longer than 2 time metatarsus; abdomen genital armature with each of its 2 dorsal appendages with 4 odontoid spines and each of the ventral processes with 2 apical seatae; penis sublanceolate.

Type locality Thalakvadi (Belgaum).

Host : Figs of *Ficus mysorensis* Hayne.

ADDENDUM TO IDARNINAE

In 1956 Joseph described a series of Idarninae from India, which are unknown to me. The following descriptions are modified from Joseph :

Parakoebelea Joseph

1956 *Parakoebelea,* Joseph, *Ann. Soc. Ent. France,* 125 : 97.

The genus is related to *Eukoebelea* Ashmead, but is separated by larger size, shorter ovipositor and other characters; head subequal to somewhat more than 1.50 times as wide as long; antennae with 13 segments : 1.1.2.6.3; maxillary palpus with 1 and labial palpus with 2 segments; fore wing about 2.50 longer than wide; ovipositor slightly longer than abdomen.

Type-species : Parakoebelea stratheni Joseph

Parakoebelea stratheni Joseph

1956 *Parakoebelea stratheni,* Joseph, *Ann. Soc. Ent. France,* 125 : 97

Female : Length 1.75-3.03 mm; body generally brownish-yellow; tergites with transverse dark brown patches, head a little more than 1.50 times as wide as long; margin in front of eyes about 0.50 of eye; scape about 2.75 times as long as thick; mandibles about 1.50 times longer than wide, tridentate; scutum 1.66 times as wide as long; scutellum hardly longer than wide; fore wing about 2.37 times longer than wide; vein *sm* about 4.66 times *m*; vein *pm* a little longer than *m*; *st* somewhat shorter; fore coxa about 2 times as long as wide; femur 2.50 times longer than thick; tibia about 7 times longer than thick, with 2 odontoid spines apically near outer margin, spur bifid; metatarsus subequal to the following 2 tarsal segments combined; hind coxa 2.50 times longer than thick; femur 3.50 times longer than thick; tibia distinctly longer than femur; tarsi slightly longer, metatarsus and the second segment with one odontoid spine each ventrally near tip; metatarsus about 0.50 of tarsus; abdomen about 0.50 of body; ovipositor subequal to abdomen.

Male : Length 2.30 mm; body generally ferruginous yellowish-brown. Head a little less than 1.50 times as long as wide, divided transversely into two parts : a smaller anterodorsal part with antennae and eyes and a larger posteroventral part with the mouthparts; antennae with 4 segments; scape a little longer than wide; second segment about 1.66 times as long as wide; third segment a little longer than thick; fourth segment small, with a whorl of sensoria near tip; mandible tridentate, a little longer than 1.50 times width; pronotum about 1.25 times as long as wide; mesonotum wider than long; metanoto-propodeum longer than wide; fore coxa about 1.60 as long as wide; femur about 1.60 times as long as wide; tibia hardly longer, with odontoid spines; metatarsus about 0.66 of tarsus and subequal to the following 3 segments conbined, with 2 odontoid spines below; middle coxa 1.33 times longer than thick; femur about 1.25 times longer than thick; tibia hardly longer, but with numerous odontoid spines; tarsi equal to tibia; metatarsus slightly less than

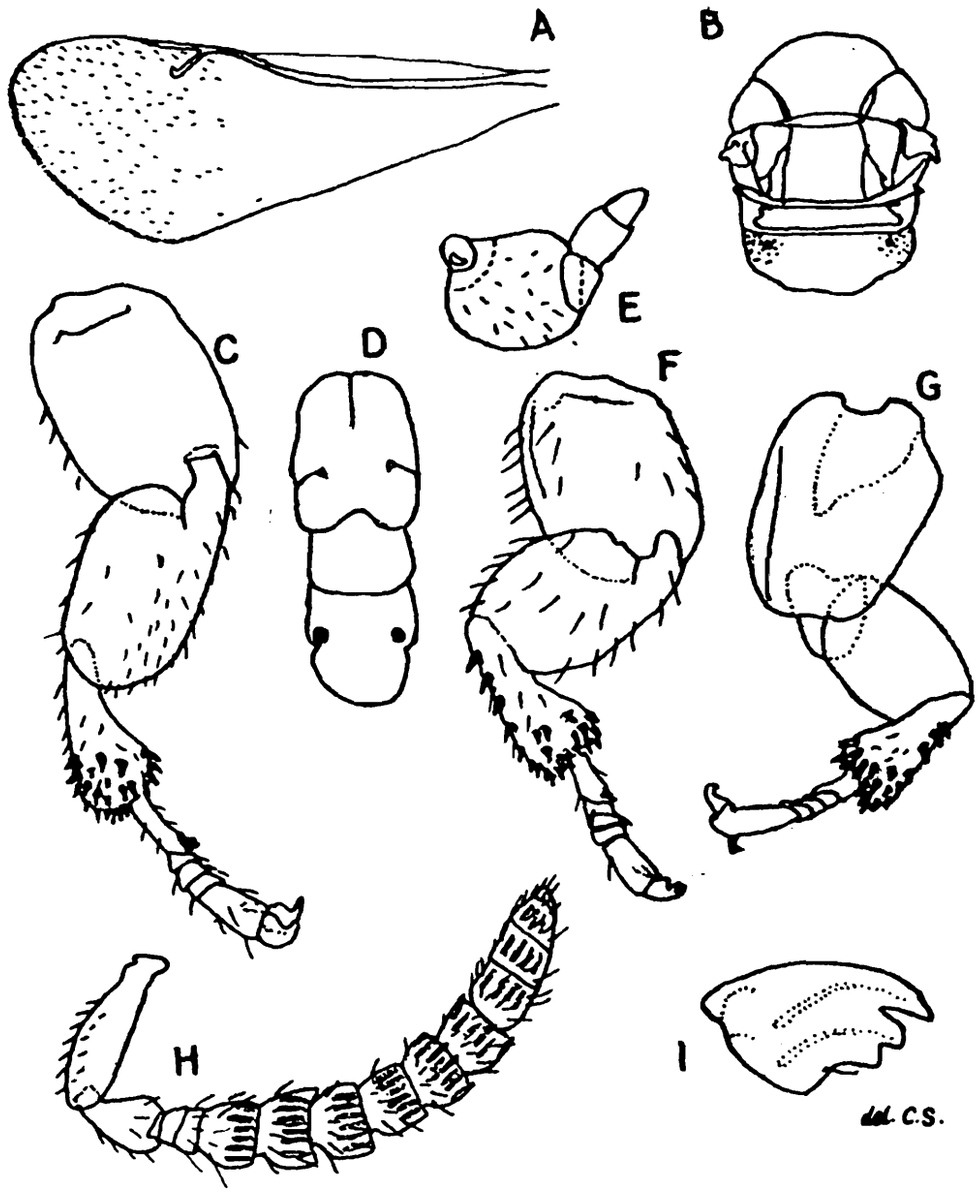

FIG. 40. *Parakoebelea stratheni* Joseph : A. Fore wing, female; B. Thorax, female; C. Hind leg, male; D. Thorax, male; E. Antenna, male; F. Middle leg, male; G. Fore leg, male; H. Antenna, female; I. Mandible, male. *(Modified from* Joseph).

0.50 of tarsus, with 2 odontoid spines; hind coxa 1.50 times as long as wide; femur 1.38 times longer than thick; tibia subequal to femur; tarsus longer than tibia; metatarsus about 0.50 of tarsus, with 2 odontoid spines; abdomen with the spiracular process on tergite 8 about 0.60 of abdomen; cerci with 3 dentate processes at tip.

Type locality : Belgaum

Host : Figs of *Ficus glomerata* Roxb.

Parakoebelea thalakvadiensis Joseph

(Fig. 41)

1956 *Parakoebelea thalakvadiensis,* Joseph, *Ann. Soc. Ent. France,* 125 : 100.

Female : Length 2.60 mm. Body brownish-yellow; tergites with 6 dark brown transverse bands.

Head about 1.50 times as wide as long; margin in front of eyes about 0.50 of eye; antennal segments 13 : 1.1.2.6.3; scape about 3.50 times as long as thick; scutum a little over 1.66 as wide as long; scutellum a little wider than long; fore wings about 2.40 times longer than wide; vein *sm* about 5 times longer than *m, pm* a little longer, *st* somewhat shorter; fore coxa about 1.75 times longer than wide; femur about 2.50 times longer than wide; metatarsus slightly longer than the following 2 segments combined; hind coxa less than 2.33 times as long as wide; metatarsus about 0.50 of tarsus; abdomen about 1.50 times longer than wide; ovipositor about 1.20 of abdomen.

Type locality : Thalakvadi (Belgaum)

Host : Figs of *Ficus mysorensis* Hayne

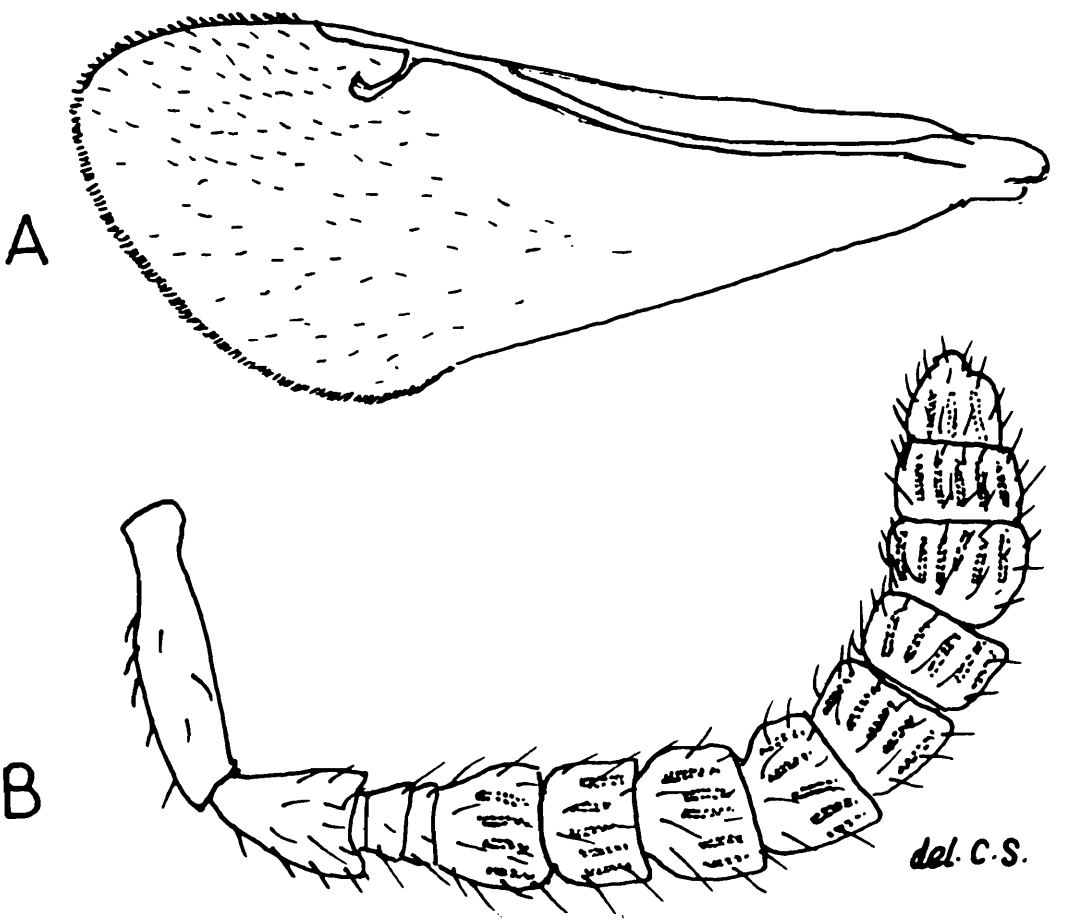

FIG. 41. *Parakoebelea thalakvadiensis* Joseph, female; A. Fore wing; B. Antenna (*After* Joseph).

Arachonia Joseph

1956 *Arachonia,* Joseph, *Ann. Soc. Ent. France,* 125 : 107.

Female : Antennae with 12 segments : 1.1.2.5.3; first annellus distinctly smaller than the second; other segments with long setae, subplumose; propodeum laterally converging behind; male antennae with 10 segments, without annelli; mesonotum distinctly demarcated from metanoto-propodeum. The genus is reported by Joseph to be related to *Sycoscapter* Westwood.

Type-species *Arachonia plumosa* Joseph.

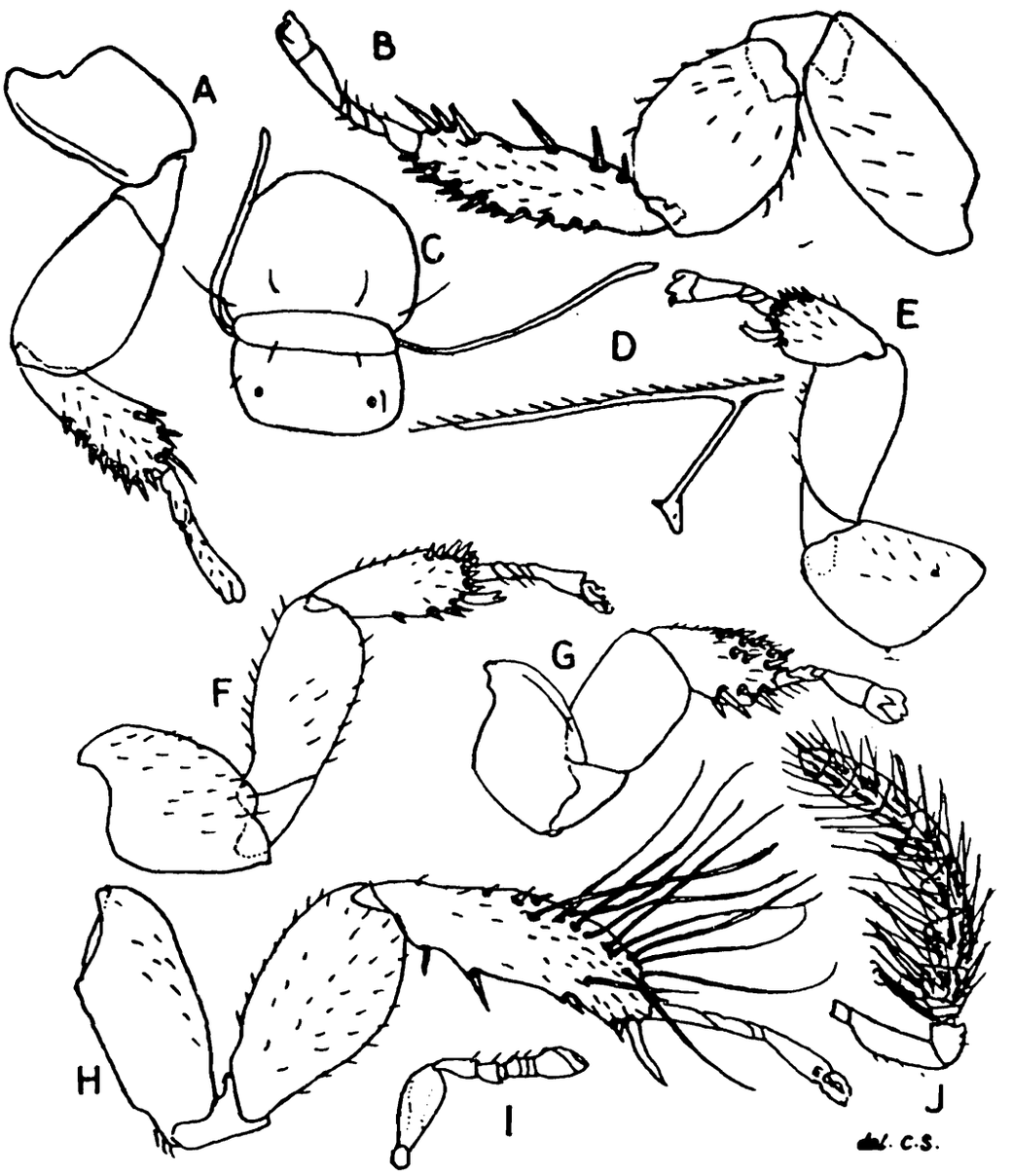

FIG. 42. *Arachonia plumosa* Joseph : A. Middle leg; B. Hind leg; C. Thorax; D. Veins st and pm; E. Fore leg; F. Fore leg; G. Middle leg; H. Hind leg, female; I. Antenna, female; J. Antenna, male. (*Modified from* Joseph).

Arachonia plumosa Joseph

(Fig. 42)

1956 *Arachonia plumosa,* Joseph, *Ann. Soc. Ent. France,* 125 : 107.

Female : Length 2.15 mm. Body iridescent blue-green; legs brown. Head distinctly wider than long; margin in front of eye about 0.66 of eye diameter; above with a distinct V-groove; scape a little more than 3 times longer than thick; pedicel a little more than thick; segments 3-4 form annelli; segments 5-9 with projecting inner margins; segments 5-12 with long plumose hairs; scutellum wider than long; fore wing 2.75 times longer than wide; vein *sm* about 1.75 times *m, pm* a little longer than *m* and about 2 times *st;* fore coxa about 2.25 times as long as wide; femur about 4.2 times longer than wide; tibia about 8 times longer than wide, with 2 odontoid spines apically; tarsus about 0.66 of tibia; metatarsus subequal to the following 2 segments combined; hind coxa 2 times as long as wide; femur 4.75 times longer than wide; tibia 1.25 times femur and 7 times longer than wide; with numerous odontoid spines; tarsus equal to femur; metatarsus about 0.50 of tarsus; ovipositor about 6 times abdomen.

Male : Form 1 : Length 2.00 mm. Body yellowish-brown; head a little wider than long; antenna with 10 segments, without annelli; scape subcompressed, 2.50 times as long as wide; pronotum wider than long, with 4 macrochetae behind; metanoto-propodeum 2 times as long as wide; fore wing filiform; fore coxa about 1.33 times as long as wide; femur subscompressed 2.20 times as long as wide; tibia a little shorter than 0.80 of femur, with numerous odontoid spines; metatarsus about 0.33 of tarsus; hind coxa less than 2.33 times as long as wide; femur subcompressed, 2 times longer than wide; tibia distinctly longer than femur, with numerous odontoid spines; tarsus about 0.66 of tibia; metatarsus about 0.33 of tarsus; abdomen longer than wide; genital armature with 2 pairs dorsal appendages bearing 4 teeth each and 2 ventral processes with a long and a short seta each; penis sublanceolate.

Type locality Thalakvadi (Belgaum)

Host : Figs of *Ficus mysorensis* Hayne.

SUBFAMILY TORYMINAE

1840 *Pteromalides* (partim), Westwood, *Introd. modern Class. Ins.* 2 : 67.
1846 *Torymidae* (partim), Walker, *List Chalc. Brit. Mus.,* 1 : 14.
1871 *Torymides,* (partim), Thomson, *Hym. Skand.,* 4 : 59, 64.
1899 *Toryminae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 247.
1904 *Toryminae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 241.
1909 *Toryminae,* Schmiedeknecht, *Gen, Ins.,* 97 : 98.
1938 *Toryminae,* Mani, *Cat. Indian. Ins.,* 23 : 38.
1979 *Toryminae,* Krombein *et al.,* Hymen. N. America, 1 : 750.

Antennae with 13 segments, parapsidal furrows distinct; hind margin of episternum incised posteriorly in the middle; vein *st* very short, knob sessile or subsessile; hind femur simple, neither dentate nor serrate; hind tibial spurs double; abdomen most usually compressed; male rarely apterous; if apterous head not oblong, without triangular fovea.

Species are parasitic on gallicolous Hymenoptera or Diptera.

KEY TO GENERA

1.	Females	2
	Males	7
2.	Scutellum with a transverse furrow before apex; second abdominal tergite incised behind in the middle . .	*Torymus* Dalman
	Scutellum without a transverse furrow before apex	3
3.	Clypeus slightly produced at apex; first flagellar segment abruptly narrower than the following segment	*Torymus* Dalman
	Clypeus truncate at apex; first flagellar segment not abruptly narrower than the following segment	4
4.	Thorax rather elongate, with pronotum conically produced in front; abdomen distinctly petiolate, strongly compressed, shorter than thorax; ovipositor very long	*Ecdamua* Walker
	Thorax not specially elongate, pronotum not conically produced in front	5
5.	Mandibles tridentate; head viewed from front not triangular; antennae subclavate, club lanceolate . .	6
6.	Pronotum short; propodeum abruptly declivous, largely punctate; antennae subclavate, club lanceolate	*Torymoides* Walker
	Pronotum not specially short; propodeum not abruptly declivous, not largely punctate	*Torymus* Dalman
7.	Antennae with 12 segments, including a single annellus	8
8.	Scutellum with a transverse furrow before apex	*Torymus* Dalman
	Scutellum without a transverse furrow before apex	9
9.	Mandibles bidentate	*Callimomus* Thomson
	Mandibels tridentate	10
10.	Thorax elongate, pronotum conically produced in front	*Ecdamua* Walker
	Thorax not elongate, pronotum not conically produced	11
11.	Propodeum abruptly declivous, largely punctate	*Torymoides* Walker
	Propodeum not abruptly declivous, not largely punctate	*Torymus* Dalman

Ecdamua Walker

1862 *Ecdamua,* Walker, *Trans. ent. Soc. London,* 1 (4) : 387.
1904 *Ecdamua,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 241.
1909 *Ecdamua,* Schmiedeknecht, *Gen. Ins.,* 97 : 101.
1938 *Ecdamua,* Mani, *Cat. Indian Ins.,* 23 : 38.

Antennae with 13 segments, including one annellus; clypeus truncate apically; first flagellar segment not abruptly thinner than the following segment; thorax long; pronotum strongly developed, conically produced; scutellum without transverse furrow; abdomen distinctly petiolate, strongly compressed, shorter than thorax; ovipositor very long.

Type-species : Ecdamua macrotelus Walker

Ecdamua mirabilis Masi

1926 *Ecdamua mirabilis,* Masi, *Konowia,* 5 : 5, fig. 2.
1972 *Ecdamua mirabilis,* Mani *et al., Oriental Insects,* 6(3) : 313.

Female : Length 5.50 mm. Head, thorax and hind coxae green; pronotum laterally and porpodeum apically violet; scape, mandible, palpi, legs including fore coxae, petiole and first tergite fulvous; tergites otherwise green with violet reflections; flagellum, wings, ovipositor brown; fore wing apically infuscate.

Head to thorax width ratio 78 : 100; occiput acutely margined; eyes glabrous, but on higher magnification minutely pubescent; interocellar space less than ocellocular space; scrobe deep with sides parallel; face minutely punctate; bidentate; scape short not reaching front ocellus; pedicel small, annellus as long as wide, first funicular segment about 1.60 times as long as thick. Mesonotum 2 times as long as wide, scutellum with faint frenum at 0.40 of length; propodeum subequal to scutellum, with a series of pits along the front margin; fore wing with vein *m* equal to 0.75 of *sm*; *pm* elongate, almost disappearing at wing tip; hind coxae not compressed; femora equal to coxae, width 0.60 of length with tooth at 0.77 of length, longer hind tibial spur about 0.25 of metatarsus, petiole about 0.80 of hind coxae; abdomen shiny, short, strongly compressed, first tergite membranous, concealed by the second; third tergite equal to others; fourth a little smaller; fifth and sixth angularly incised; ovipositor 2 times the abdomen.

Male : Length 3.50 mm. Similar to female in colour and in general structure except that the thorax is largely violet; abdomen dorsally fusco-aeneous, first funicular segment not longer than thick; terminal segment as long as thick; hind coxae not very elongated; abdomen compressed, viewed at side subtriangular

Type locality : Taiwan
Distribution : Taiwan; India : Dehra Dun

SPECIES INCERTAE SEDIS

Ecdamua indica Walker

1871 *Ecdamua indica,* Walker, *Notes Chalc.,* 4 : 35.
1909 *Ecdamua indica,* Schmiedeknecht, *Gen. Ins.,* 97 : 101.
1938 *Ecdamua indica,* Mani, *Cat. Indian Ins.,* 23 : 39.

Type locality India

Torymoides Walker

1871 *Torymoides,* Walker, *Notes Chalc.,* 3 : 37.
1904 *Torymoides,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 242.
1909 *Torymoides,* Schmiedeknecht, *Gen. Ins.,* 97 : 109.
1938 *Torymoides,* Mani, *Cat. Indian Ins.,* 23 : 39.

This genus is separated from *Torymus* by the following characters : body slender; head wider than thorax; pronotum relatively very short; propodeum abruptly declivous and coarsely punctate; antennae in female clavate; club sagitate; ovipositor equal to abdomen; head and thorax metallic-blue-green; abdomen and legs yellow.

Type-species : Torymoides amabilis Walker

Torymoides amabilis Walker

1871 *Torymoides amabilis,* Walker, *Notes Chalc.,* 3 : 38.
1909 *Torymoides amabilis,* Schmiedeknecht, *Gen. Ins.,* 97 : 109.
1938 *Torymoides amabilis,* Mani, *Cat. Indian Ins.* 23 : 39.

Type locality : Sri Lanka

Torymus Dalman

1758 *Ichneumon,* (partim), Linnaeus, *Syst. Nat.,* 10 : 567.
1811 *Callimome,* Spinola, *Ann. Mus. Hist. nat.,* 17 : 148.
1817 *Misocampus,* Latreille, *Nouv. Dict. Hist. Nat.* (ed. 2) : 227.
1820 *Torymus,* Dalman, *Svensk. Vet. Akad. Handl.,* 41 : 135, 178.
1829 *Misocampus,* Stephens, *Cat. Brit. Ins.,* 5 (1) : 395.
1856 *Syntomaspis,* Förster, *Hym. Stud.* 2 : 43.
1874 *Torymus,* Mayr. *Verh. zool.-bot. Ges. Wien.,* 24 : 86.
1875 *Lioterphus,* Thomson, *Hymen, Skand.,* 5(4) : 60, 99.
1875 *Torymus,* Thomson, *Hymen, Skand.,* 4(1) : 80.
1904 *Hemitorymus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 242.
1909 *Torymus,* Schmiedeknecht, *Gen. Ins.,* 97 : 102.
1927 *Callimome,* Huber, *Proc. U.S. nat. Mus.,* 70 : 1-114.
1938 *Torymus,* Mani, *Cat. Indian Ins.,* 23 : 39.
1948 *Torymus,* Hobbs, *Pan-Pacific Ent.,* 24 : 95-96.
1975 *Torymus,* Goodpasture and Grissell, *Canad. Jour. Genet and Cytol.* 17 : 413-422.
1979 *Torymus,* Krombein *et. al.,* Hymen N. America, 1 : 750.

Mandibles tridentate apically; eyes naked or only very finely pubescent; antennae with 13 segments; 1.1.1 7.3, in male funicular segments transverse; scape below often pale, rarely reaching front ocellus; pronotum transverse; parapsidal furrows complete; scutellum with or without a frenum; propodeum short and gently sloping not rugosely punctate; smooth not coarsely punctate to finely rugosely punctate; abdomen above compressed to an acute edge; ovipositor long exserted, the first tergite in male always incised.

Type-species : Torymus bedeguaris (Linnaeus)

KEY TO SPECIES

1. First funicular segment distinctly longer than other segments	*Torymus bangalorensis* (Mani & Kurian)
First funicular segment subequal to the following segments	*Torymus chaubattiensis* Bhatnagar

Torymus bangalorensis (Mani & Kurian)

1953 *Syntomaspis bangalorensis,* Mani & Kurian, *Indian J. Ent.*, 15(1) : 1, 2.

Female : Length 4.00 mm. Body iridescent blue and green; antennae dark-brown; scape yellowish-brown; coxae metallic-bronze, rest of legs brown; hind femur dark reddish-brown; abdomen iridescent blue-green.

Head viewed from above slightly wider than thorax; width 3 times the length; ocellocular space 0.50 of the interocellar and 1.50 times the front ocellar space; vertex convex, narrow, rugosostriate, margined; occiput excavate, smooth and shiny; viewed from front triangular, orbital borders parallel, eyes bare; frons rugosely sculptured, scrobes separated by a complete carina, face with shallow obscure punctae and sparse pubescence; mandibles short, stout, with acute apices; antennae inserted above level of lower orbital borders; gena 0.50 of eye; viewed from the side, temples nearly 0.33 of thickness of eye in the middle; antennal segments 13: 1.1.1.7.3; scape slightly over 3 times as long as pedicel; annellus somewhat less than 0.33 of pedicel, transverse; first funicular segment slightly longer than rest; other segments subequal.

Thorax: Pronotum with a leathery sculpture and transversely striate; mesonotum leathery, rugosopunctate and transversely striate, with parapsidal furrows distinct; scutellum large, convex, demarcated into a leathery, rugosely punctate and striated basal region with a median longitudinal furrow and a smooth and shiny apical region, with a deep groove, surrounded by rows of pits separating it from the propodeum; propodeum triangular, smooth and shiny; spiracles large, linear; hind coxa long, stout; femur somewhat shorter than tibia; tibia 2.50 times as long as metatarsus; rest of tarsal segments gradually become shorter, except the last which is slightly longer than

the preceding; fore wing slightly over 2.50 times as long as broad; veins *sm* : *m* : *st* : *pm* ratio 150 : 100 : 10 : 110.

Abdomen petiolate, viewed from above dumb-bell-shaped, laterally compressed, nearly triangular, including petiole nearly equal to thorax; petiole slender, second abdominal tergite largest, third tergite 0.50 of the second, fourth nearly equal to third, fifth shorter; ovipositor slightly over 3 times the body.

Type locality Bangalore.

Distribution : Bangalore.

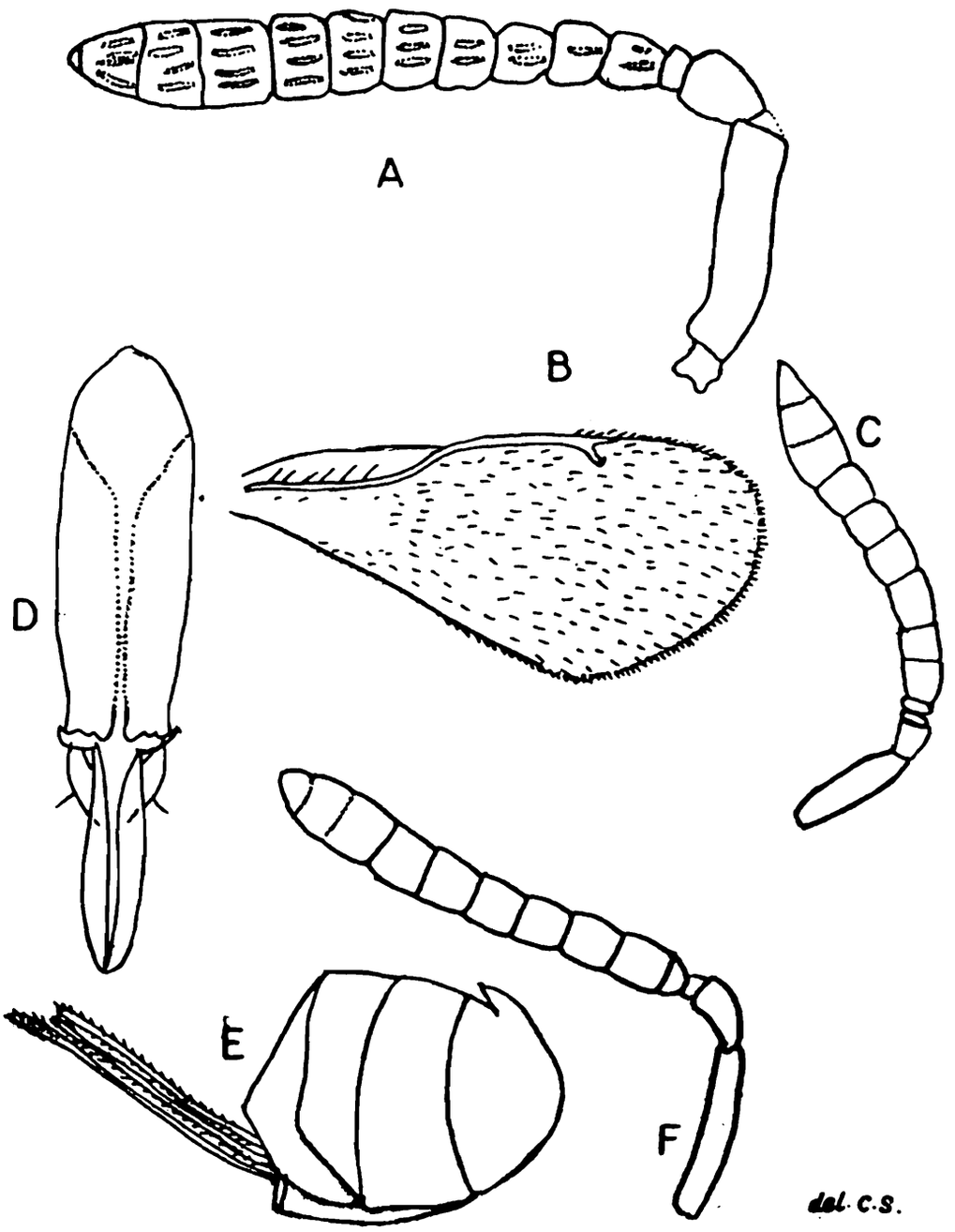

FIG. 43. A. *Torymus chaubattiensis* Bhatnagar, Antenna; B-F. *Pseudotorymus indicus* (Mani) : B. Fore wing; C. Antenna; D. Genitala; E. Abdomen; F. Antenna.

Torymus chaubattiensis Bhatnagar

(Fig. 43)

1951 *Torymus chaubattiensis,* Bhatnagar, *Indian J. agric. Sci.,* 21 (2) : 155.

Female : Length 2.00 mm. Body generally metallic-green; reticulately sculptured, sparsely clothed with silvery-white pubescence; postorbital space metallic green; antennae dark brown; scape slender; pale brown and slightly curved, not reaching the front ocellus; pedicel dark brown; tegulae dark brown; legs with coxae and hind femur metallic green; fore femur in basal 0.50 externally, whole of hind femur metallic green; fore femur apically, hind femur at extreme apex, all tibiae and tarsi brown; wing hyaline; veins light brown.

Head viewed from above; vertex closely rugosely punctate, in between ocelli punctures shallow; ocelli arranged in a triangle, ocelli more close to eye than to each other; ocellocular space equal to ocellar diameter; interorbital space 0.60 of width of head; front ocellar space less than 0.50 of interocellar; occiput concave, dull and obscurely longitudinally striate. Viewed in front broadly rounded; width 1.20 times the height; face convex; frons with the scrobes deep below, parallel and close together with a median carina in between; eyes finely pubescent; innerorbital border straight, slightly converging above; gena 0.25 of inner orbital length; clypeus straight, not dentate below; mandibles tridentate, first tooth acute, second obtuse, third truncated. Viewed from side postorbital space nearly 0.33 of width of head, sparsely setose, shallowly and closely punctate; antennae clothed with fine short pubescence; inserted well above the level of lower orbital border; space between the antennal sockets slightly less than that between the socket and the orbit; segments 13; 1 : 1 : 1 : 7 : 3; scape slender, not reaching front ocellus; pedicel 1.50 times as long as thick, less than 0.33 of scape; annellus narrower than pedicel, 0.50 times as long as wide; first funicular segment 0.67 of pedicel, length equal to diameter, second funicular segment slightly thicker but nearly as long; succeeding segments equal to first in length but gradually growing wider; seventh funicular segment 1.50 times as thick as long; club distinctly thicker than funicle and nearly 0.50 times as long, apically blunt.

Thorax rugulose, matt with a few scattered shallow punctures especially anteriorly on the scutum and on scapula; parapsidal furrows complete, deep; scutellum when seen in front slightly projecting behind, sculptured like mesonotum, convex; mesopleurae smooth behind the pleural suture but rugulosely sculptured in front; propodeum smooth, shiny with no trace of carinae, spiracle small, circular; hind coxa and femur sculptured like thorax; hind tibiae with one short apical spur which is 0.20 of metatarsus; metatarsus 0.50 of length of hind tarsi and 0.33 of tibiae; wing more than 2 times as long as broad; veins *sm* : *m* : *pm* : *st* ratio 200 : 100 : 33 : 16;

st short not exceedingly narrow behind base; *st* moderately large; discal pubescence short and sparse; marginal fringe short; submarginal with a row of 8 long equally spaced setae in straight part, 2 setae on the distal curved part; veins *m* and *pm* with a double row of short, stout and stiff setae.

Abdomen as long as thorax, segments smooth and shiny; basally strongly convex, slightly compressed at sides especially below; ovipositor sheath well exserted, a little shorter than abdomen.

Type locality : Chaubattia
Distribution : Kumaon Himalaya
Host : Aphis helichrysi Kalt.

Species Incertae Sedis

Torymus ceylonicus (Motschulsky)

1863 *Callimone ceylonicus,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 47.
1909 *Torymus ceylonicus,* Schmiedeknecht, *Gen. Ins.,* 97 : 104.
1938 *Torymus ceylonicus,* Mani, *Cat. Indian Ins.,* 23 : 39.

Length 2.50 mm. "Elongata, sublinearies, vix convexa, metallica, viridi-cuprea, metanotis linea lateralis, axillis, abdomine subtus pedibusque pallido-testaceis, tarsis versus apicem infuscatis; capite subrotundato, glabro, metallico-viridi, facie excavato, antice medio elevato, ocellis minutis, subtestaceis, oculis magnis, convexis, prominulis, antennis thorace paulo brevioribus, tenuis, apice leviter clavatis, scapo subarcuato, 0.33 parte occupante, articulo 2do elongato-obconico, 3o angustiori et paulo longiori, 4o et sequentibus, plus minusve transversis, ultimo magno, ovato, apice acuminato; thorace elongato-ovato, postice attenuato, vix distincto punculato, pronoto medio impresso, lateribus convexis, arcuatis, mesonoto triangulari, utrinque obliquo impresso, segmentis convexis, metanoto subquadranto, vix distincto; abdomine elongato subovato, compresso; apice attenuatao, oviducto abdomine paulo breviori, fusco-testaceo; alis hyalinosubalbidis vena costali elongata, nigro-fusca."

Type locality : Mt. Nuwara Ellia : Ceylon
Distribution Sri Lanka, India.

SUBFAMILY MONODONTOMERINAE

1875 *Torymides* (partim), Thomson, *Hym. Stud.,* 4 (1) : 59.
1899 *Monodontomerinae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 247.
1904 *Monodontomerinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 242.
1909 *Monodontomerinae,* Schmiedeknecht, *Gen. Ins.,* 97 : 109.
1923 *Monodontomerinae,* Ruschka, *Z. angew. Ent.,* 9 : 395.
1938 *Monodontomerinae,* Mani, *Cat. Indian Ins.,* 23 : 40.
1979 *Monodontomerinae,* Krombein *et al.,* Hymen N. America, 1 : 759.

Hind femora strongly swollen, as long as tibia, below either feebly serrate or with one or 2 teeth before tip; tibiae straight; propodeum usually with a median carina, coarsely rugulose or punctate; vein *st* not very long, oblique, clavate; hind margin of mesepisternum not incised. The species are parasites on bees or they are gall makers.

KEY TO GENERA

1.	Females	2
	Males	8
2.	Hind femora beneath with only 1-2 large teeth a little before tip	3
3.	Scutellum without a transverse furrow before apex	4
	Scutellum with a transverse furrow before apex	5
4.	Abdomen short, not longer than head and thorax combined; fore wing with vein *st* very short	*Pseudotorymus* Mayr
	Abdomen shorter than head and thorax; vein *st* shorter than *pm*	*Liodontomerus*
5.	First abdominal tergite incised behind in the middle	6
	First abdominal tergite not incised behind in the middle	*Monodontomerus* Westwood
6.	Head and thorax with large umbilicate punctae; antennae with 7 funicular segments	7
7.	Hind femora with a single tooth beneath near tip	*Diomorus* Walker
8.	Hind femora finely serrate beneath and also usually with 1-2 tooth towards tip	17
	Hind femora with only one large tooth beneath some distance before tip	9
9.	Scutellum with a transverse furrow before apex	11
	Scutellum without a transverse furrow before apex	10
10.	Fore wing with vein *st* very short; abdomen concave above	*Pseudotorymus* Mayr
11.	First abdominal tergite incised in the middle of the hind margin	*Diomorus* Walker
	First abdominal tergite straight and not incised in the middle on the hind margin	*Monodontomerus* Westwood

Pseudotorymus Mayr

1874 *Holaspis,* Mayr, *Verh. zool.-bot. Ges. Wien,* 24 : 83 (preoccupied in fishes)
1904 *Holaspis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 242, 243.
1909 *Holaspis,* Schmiedeknecht, *Gen. Ins.,* 97 : 111.
1922 *Pseudotorymus,* Masi, *Ann. Civ. Stor. Nat. Mus. Genova,* 49 : 235.
1979 *Pseudotorymus,* Krombein *et al.,* Hymen. N. America, 1 : 763.

Head transverse; eyes almost naked; funicular segments transverse; mesonotum finely, rugosely punctate; scutellum without transverse furrow; fore wing veins *st* and *pm* very short; hind tibiae neither serrate not carinate, but with one more or less distinct tooth before tip; abdomen not longer than head and thorax combined; body metallic-blue or green.

Type-species *Pseudotorymus militaris* (Boheman)

Pseudotorymus indicus (Mani)

(Fig. 43)

1942 *Holaspis indicus,* Mani, *Indian J. Ent.,* 4(2) : 153.
1972 *Holaspis anamalaianus,* Mani & Kaul, *Orient. Ins.,* 6(3) : 313.

Female Length 2.00 mm. Body bright metallic-green; antennae except dark metallic green scape and pedicel brownish-black; wings hyaline, veins pale brown; tibiae and tarsi white, tibial spurs white, otherwise legs concolorous with body; ovipositor black.

Head viewed from above transverse, slightly narrower than thorax, head width to length 11 : 4; interorbital space a little more than 0.50 of head width; ocellocular space equal to ocellar diameter, interocellar space 3 times ocellar diameter; vertex finely rugulose; viewed in front nearly as long as wide; orbital border slightly converging above; face uniformly, finely, rugosely punctate; viewed from side rectangular, thickness to height 3 : 7; eye oval, 2 times as long as wide; gena 0.50 of length of eye, genal carina absent; postorbital space smooth and shiny. Antenna inserted distinctly above the lower orbital border; segments 13 : 1.1.2.6.3; scape a little less than 0.25 of antenna; first annellus smaller than second; first 4 funicular segments subequal, fifth and sixth segments a little shorter, transverse; club nearly equal to preceding 2.50 segments combined.

Thorax length to width 7 : 5, mesonotum 6 times as long as pronotum; parapsidal furrows complete; propodeum short and smooth; mesonotum smooth; fore wing a little over 2 times as long as wide, veins *sm : m : pm : st* ratio 14 : 10 : 2 : 1; hind femur nearly 4 times as long as wide, with a single tooth subapically; tibia equal to femur, spurs 2 equal, each 0.40 of metatarsus; tarsus equal to tibia; metatarsus a little less than 0.50 of tarsus, second segment a little over 0.33 of metatarsus, third segment 0.75 of second, fourth a little shorter than second and subequal to fifth.

Abdomen less than 0.50 of body, compressed; seen from the side length to thickness 6 : 5; seen from above 2 times as long as thick; first abdominal tergite distinctly incised; ovipositor equal to abdomen.

Male : Length 1.50 mm. Generally like female.

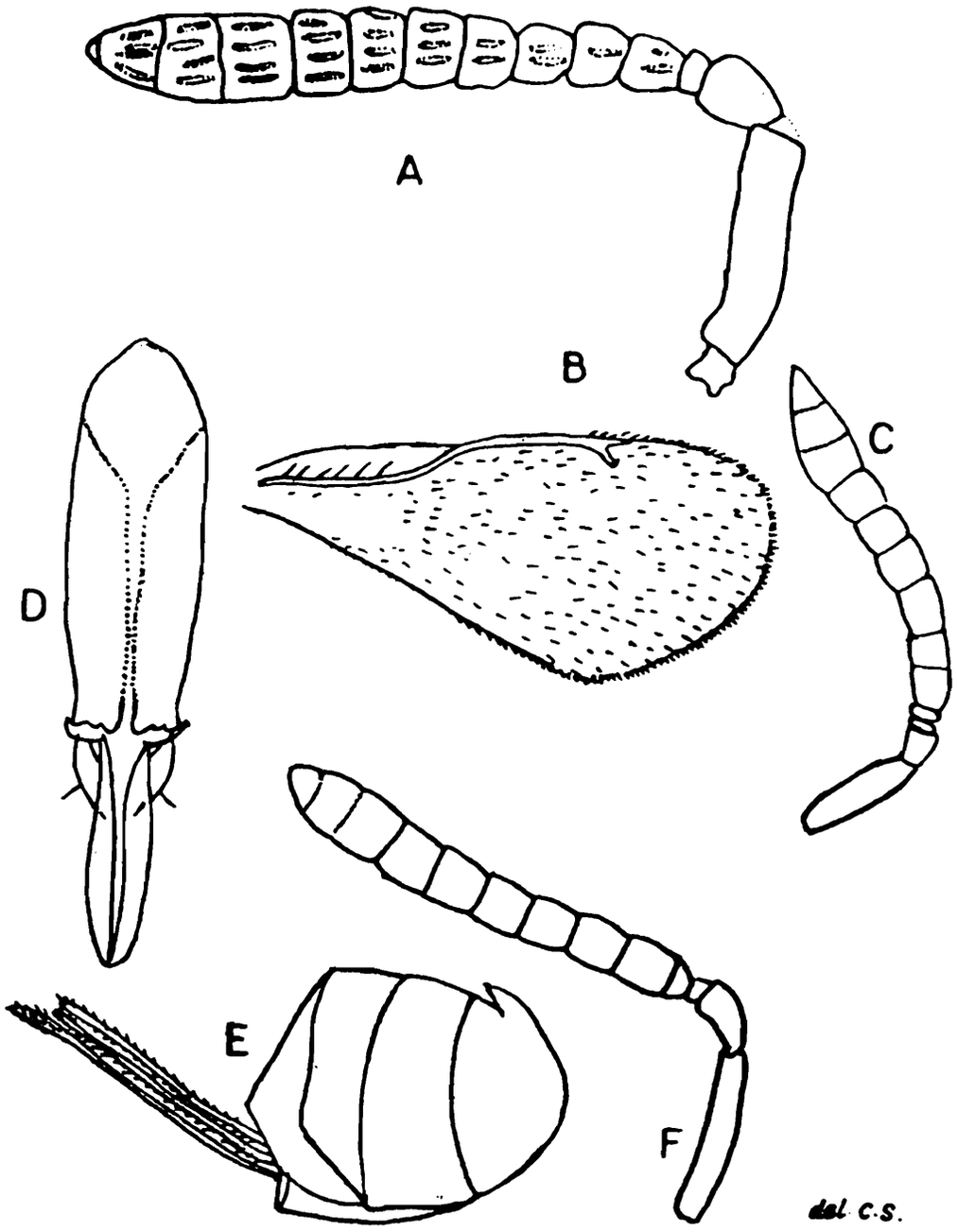

FIG. 43. A. *Torymus chaubattiensis* Bhatnagar, Antenna; B-F. *Pseudotorymus indicus* (Mani) : B. Fore wing; C. Antenna; D. Genitala; E. Abdomen; F. Antenna.

Type locality Dehra Dun

Distribution : Kollimalai Hills, Mallampuzha (Palghat), Valparai & Munnar (Anamalai Hills), Berijam and Perumal Malai, (Kodaikanal); Dehra Dun

Host : Leaf-cutting bee

Diomorus Walker

1834 *Diomorus,* Walker, *Ent. Mag.,* 2 : 159.
1874 *Diomorus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 24 : 73.
1904 *Diomorus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 243.
1906 *Diomorus,* Schultz, *Spolia Hym.,* 148.
1909 *Diomorus,* Schmiedeknecht, *Gen. Ins.,* 97 : 113.
1979 *Diomorus,* Krombein *et al.,* Hymen. N. America, 1 : 758.

Funicle in female with 7 segments; head and thorax coarsely umbilicately punctate and distinctly pubescent; scutellum with distinct, deep transverse furrow and polished behind; vein *pm* almost 3 times as long as *st;* hind femur smooth below, with a stout tooth, befor tip; hind metatarsus long; abdomen compressed; hind margin of first abdominal tergite incised in the middle; hind tarsi rather strongly lengthened.

Type-species : Diomorus armatus (Boheman)

Diomorus cupreus (Spinola)

1808 *Diplolepis cupreus,* Spinola, *Ins. Ligur.,* 1 : 212.
1952 *Diomorus cupreus,* Stephan, *Bull. Mus. Hist. Nat.,* (2) 24 : 293.
1972 *Diomorus cupreus,* Mani, *Orient. Ins.,* 6 (3) : 316.

Female Length 5.00 mm. Body bright metallic coppery-red; with large umbilicate punctation, densely setose; scutellum with cross furrow; vein *pm* about 3 times *st.*

Type locality : Europe

Distribution : Europe, Asia : Oriental Region.

Host : Osmia; Sphegidae, on *Clerodenduron infortunatum*

Diomorus orientalis Masi

1926 *Diomorus orientalis,* Masi, *Konowia,* 5 : 2, fig. 1.
1972 *Diomorus orientalis,* Mani, *Orient. Ins.,* 6 (3) : 316.

Female : Length 4.50-5.50 mm. Body green, partly shiny blue; scrobe, vertex and abdomen above golden-green; tergites marginally coppery; scape pale reddish-yellow; apically brown spotted; flagellum brown; wings hyaline; hind coxae below; hind femora at sides violet-blue; teeth subhyaline; base of fore tibiae and all tarsi pale yellow; hind tibiae in the middle pale; apically brown; tibial spur fuscous.

Head thorax ratio 87 : 100; viewed in front triangular, faintly alveolate-strigose; occiput margined, eyes glabrous, clypeus sub-equilateral triangled; mandibles tridentate; maxillary palpi with 4 segments; of which 2 and 3 short subequal; labial palpi with 3 segments; flagellum stout; first funicular segment long, terminal club segment a little longer than preceding segment; thorax transversely

strigose; pronotum sculpture less conspicuous, scutellum with frenum, propodeum with a median cordate elevated area; sulci short; fore wing with veins *m pm st* ratio 7 : 4 : 1; legs long; hind coxae about 0.60 of thorax; femora to coxae ratio 100 : 71, teeth triangular; hind tibial spur 0.33 of metatarsus; abdomen compressed, petiole short; first tergite occupying 0.33 of dorsum; second tergite hidden; incised posteriorly in middle; ovipositor subequal to thorax.

Male : Length 4.00-4.50 mm. Scapula fulvous, spotted brown; first tergite laterally rufous; hind tibiae in the posterior 0.33 not pale; thorax less robust than in female; hind coxae not exceeding 0.66 of scutellum.

Type locality : Taiwan

Distribution : Taiwan; India : Himachal Pradesh; Nahan; Dehra Dun Forest Research Institute.

Host : Larva of Sphegidae

Liodontomerus Gahan

1856 *Löchites,* Förster, *Hym. Stud.,* 2 : 43, 44, 120. (preocc. by *Lochites,* Gistl, 1848 (Protozoa))
1914 *Liodontomerus,* Gahan, *Proc. U.S. Nat. Mus.,* 48 : 159.
1946 *Lochitisca,* Ghesquiere, *Rev. de Zool. et de Bot. Africanes* 34 : 368.
1952 *Liodontomerus,* Nikolskaya, *Chal. fauna U.S.S.R.,* 44 : 135.
1958 *Liodontomerus,* Burks in Butler and Hansen, *Pan-Pacific Ent.,* 34 : 224.
1979 *Liodontomerus,* Krombein *et al.,* Hymen. N. America, 1 : 760.

Members of this genus are parasitic upon *Bruchophagus* in leguminous seeds.

Type-species : Liodontomerus perplexus Gahan.

Liodontomerus indicus Subba Rao & Bhatia

1961. *Liodontomerus indicus,* Subba Rao & Bhatia, *Indian J. Ent.,* 23 : 125.

Female : Length 1.50 mm. Head and thorax metallic-green, with blue and red iridescence; abdomen brownish-yellow; ovipositor sheath dark brown; legs lemon-yellow; eyes brick-red.

Head and thorax very finely closely punctate, propodeum and scutellum less strongly sculptured; scrobes deep, front ocellus within scrobes; ocellocular space slightly more than interocellar space; antennae strongly clavate, scape just reaching the vertex, funicular segments thicker than long; segments 1-6 gradually becoming thicker apically; club long, elliptical, much thicker than funicle; scape long, cylindrical, longer than 0.50 of funicle (19 : 25); pedicel slightly 0.33 of scape; vein *sm* very long, *m* less than 0.50 of *sm; pm* shorter than *m, st* shorter than *pm.*

Abdomen slightly shorter than head and thorax combined; ovipositor exserted, 0.33 of abdomen.

Male Generally similar to female, except for the slightly smaller size.

Type locality Delhi
Distribution : Delhi
Host Unknown

Monodontomerus Westwood

1883 *Monodontomerus,* Westwood, *Philos. Mag.,* (3)2 : 443.
1874 *Monodontomerus,* Mayr, *Verh. zool.-bot., Ges. Wien.,* 24 : 66.
1904 *Monodontomerus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 243.
1909 *Monodontomerus,* Schmiedeknecht, *Gen. Ins.,* 97 : 112.
1912 *Paroligosthenus,* Cameron, *Indian forest Rec.,* 4, 4 : 94.
1921 *Monodontomerus,* Waterston, *Indian forest Rec.,* 9 : 2.
1923 *Monodontomerus,* Ruschka, *Z. angew. Ent.,* 9 : 395-408.
1938 *Monodontomerus,* Mani, *Cat. Indian Ins.,* 23 : 40.
1941 *Monodontomerus,* Gahan, *Proc. US. Nat. Mus.,* 90 : 461.
1952 *Monodontomerus,* Steffan, *Bul. Paris. Mus. d'Hist., Nat.,* 24 : 288-290.
1952 *Monodontomerus,* Nikolskaya, *Chalcid, fauna, U.S.S.R.* 44 : 137-140.
1979 *Monodontomerus,* Kormbein *et al.,* Hymen. N. America, 1 : 761.

Head transverse; eyes large, densely hairy; occiput margined; antennae rather short or stout; antennae with 13 segments : 1.1.1.7.3; head and thorax rugosely punctate; scutellum with a distinct transverse furrow, behind which it is smooth and polished; propodeum anteriorly often with subtriangular depression in the middle bisected by a median longitudinal carina; fore wing mostly clouded, especially near vein *st;* vein *m* about 0.50 of *sm; pm* shorter than *m; sm* a little shorter than *pm;* hind coxa large, with a prominent tubercular process apically inside above; hind femora broad, with a single tooth below beyond the middle; hind femora below before tip with a distinct acute tooth; hind tibial spurs short unequal; first abdominal tergite not incised posteriorly; ovipositor prominently exserted.

Type-species *Monodontomerus obscurus* Westwood

Monodontomerus obscurus Westwood

1832 *Cynips aenea,* Fonsc., *Ann. Sc. nat.,* 26 : 286.
1833 *Monodontomerus obscurus,* Westwood, *Philos. Mag.* (3) 2 : 443.
1833 *Callimome pubescens,* Walker, *Ent. Mag.,* 1 : 138.
1844 *Torymus dresdensis,* Rtz., *Ichn d. Forstins,* 1 : 177.
1844 *Torymus metallicus,* Rtz., *Ichn d. Forstins,* 1 : 177.
1860 *Monodontomerus intermedius,* Förster, *Verh. nat. V. Preuss. Rheinl.* 17 : 106.
1874 *Monodontomerus obscurus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 24 : 68.

1912 *Paroligosthenus trichophthalmus,* Cameron, *Indian forest Rec.,* 4 : 94.
1921 *Monodontomerus trichophthalmus,* Waterston, *Indian forest Rec.,* 19 : 2.
1936 *Monodontomerus trichophthalmus,* Mani, *Rec., Indian Mus.,* 38 : 125.
1938 *Monodontomerus trichophthalmus,* Mani, *Cat. Indian Ins.,* 23 : 40.
1941 *Monodontomerus obscurus,* Gahan, *Proc. U.S. Nat. Mus. 90 : 470.*
1952 *Monodontomerus obscurus,* Steffan, *Bul. Paris, Mus. d'Hist. Nat.,* (2) 24 : 289-290.
1958 *Monodontomerus obscurus,* Eady, *Ent. monthly Mag.,* 94 : 269.
1969 *Monodontomerus obscurus,* Peak, *Canad. Ent.,* 101 : 419.
1972 *Monodontomerus obscurus,* Mani, & Kaul, *Orient. Ins.,* 6(3) : 316.
1979 *Monotontomerus obscurus,* Krombein *et al.,* Hymen. N. America, 1 : 762.

Female Length 2.00-4.20 mm; ovipositor 1.80 mm; body bright to dull metallic bluish-green; thorax black, tinted bluish-green, especially on pronotum, mesonotum behind and scutellum in front; propodeum bluish-green; coxae and femora black, tinted green; tibiae and tarsi reddish-testaceous; scape testaceous, darker apically; pedicel brown; flagellum black; wings hyaline with a slight infuscation around vein *st;* abdomen black; first tergite slightly green.

Head uniformly, heavily shagreened with white pubescence; eyes hairy; ocellocular space equal to lateral ocellar diameter; interocellar space 3 times the ocellocular space; malar space equal to 0.33 of eye, with groove; front margin of face straight; scape subcylindrical, nearly reaching front ocellus; pedicel a little less than 2 times as long as thick; annellus 0.66 times as wide as long; first funicular segment subequal to pedicel, thicker and a little longer than thick; remaining funicular segments subquadrate; club subequal to 2 preceding segments combined.

Thorax shagreened; parapsidal furrows complete; scutellum longer than wide; transverse furrow in the apical 0.33; posterior margin carinate; behind the transverse furrow reticulate, but more weakly in the middle than at the sides; propodeum bare; smooth medially and hairy at the sides; spiracualr sulci foveolate; coxae and femora sculptured; hind femoral tooth short, obtuse, located at a little more than 0.20 before tip; fore wing 2.50 times as long as wide; veins *sm : m : pm : st* ratio 57 : 27 : 13 : 8.

Abdomen equal to thorax; sculptured at sides; first tergite smooth above a little less than 0.33 of abdomen; other tergites faintly striolate; second tergite about 0.50 of the first; third tergite 1.50 times as long as the second; fourth subequal to second; fifth a little shorter than fourth; sixth and seventh tergites equal to fourth; ovipositor equal to abdomen.

Male : Length 2.00-3.90 mm. Like female, except scape darker; first funicular segment not longer than thick; other funicular segments slightly thicker than long; second tergite very short and almost concealed by the first.

Type locality : Europe

Distribution India : Allahabad, Dehra Dun, Punjab, Assam, U.P., Pakistan : Lyallpur, Rawalpindi. Europe, Japan, America.

Host *Osmia cordata* Robt., *Osmia lignaria* Say, *Megachile pacifica* (Panzer), on defoliator of *Pinus longifolia, Dalbergia sisso, Terminalia tomentosa,* etc.

This species differs from others in the propodeum being smooth between the median depression and sulci; median depression shallow and confined to anterior 0.50.

SUBFAMILY PODAGRIONINAE

1904 *Podagrioninae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 244.
1909 *Podagrioninae,* Schmiedeknecht, *Gen. Ins.,* 97 : 116.
1915 *Podagrioninae,* Girault, *Mem. Queensland Mus.,* 4 : 286.
1917 *Podagrioninae,* Rabaud, *Bull. Soc. Ent. France,* 178.
1919 *Podagrioninae,* Kieffer, *Bull. Soc. Ent. France,* 357-359.
1925 *Podagrioninae,* Gahan, *Philip. J. Sci.* 27 : 89.
1938 *Podagrioninae,* Mani, *Cat. Indian Ins.,* 23 : 40.
1979 *Podagrioninae,* Krombein *et al.,* Hymen. N. America, 1 : 767.

This subfamily forms a transition between Torymidae and Chalcididae. It approaches the Chalcididae very closely, in having stout dentate and swollen; hind femora; curved hind tibiae; propodeum with a forked longitudinal keel; mescpisternum entire; hind tibial spurs double; parapsidal furrows present.

Podagrion Spinola

1811 *Podagrion,* Spinola, *Ann. Mus. Hist. Nat.,* 17 : 147.
1825 *Palmon,* Dalman, *Handl. Svenska Vet. Akad.,* 46 : 388.
1833 *Priomerus,* Walker, *Ent. Mag.,* 1 : 116, 118.
1847 *Palmon,* Westwood, *Trans. ent. Soc. London,* 4 : 259.
1847 *Pachytomus,* Westwood, *Trans. ent. Soc. London,* 4 : 260.
1857 *Bactryischion,* Costa, *Mem. Accad. Sci. Napoli,* (A) 2 : 223.
1857 *Notopodion,* Dahlbom, *Forh. Ofvers Svenska Vetens. Akad.,* 14 : 295.
1868 *Blephonira,* Holmgren. *Zool. Eng. Resa,* 6(1) : 438.
1871 *Palmon,* Walker, *Notes Chalc.,* 2 : 19.
1890 *Cyanostola,* Saussure, *In : Grandidies, Hist. Madagascar,* 20, Hym. 1, pl. 15, fig. 30.
1904 *Podagrion,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 244.
1906 *Notopodium,* Schultz, *(emend), Spolia Hym.,* 150.
1906 *Podagrium,* Schultz, *(emend), Spolia Hym.,* 150.
1909 *Podagrion,* Schmiedeknecht, *Gen. Ins.,* 97 : 116.
1913 *Podagrionella,* Girault, *Arch. Naturgesch.,* 79 (A) pt. 6 :96.
1913 *Pachytomoidella,* Girault, *Bull, Wis. Nat. Hist. Soc.,* 11 : 40.
1915 *Propodagrion,* Girault, *Mem. Queensland Mus.,* 4 : 287.
1917 *Propachytomoides,* Girault, *Ins. Inscit, Menst.,* 5 : 152.
1917 *Podagrion,* Masi, *Novit. Zool.,* 24 : 126.

1922 Podagrion, Gahan, *Proc. U.S. Nat. Mus.*, 61 (24) : 265.
1925 *Podagrion, Gahan,* Philip. J. Sci., 27 : 89.
1926 *Podagrion,* Masi, *Konowia,* 5 : 8-19, 170.
1938 *Podagrion,* Mani *Cat. Indian Ins.*, 23 : 41.
1955 *Podagrion,* Ferrière, Mem. Soc. Roy. Ent. De Belg., 27 : 216.
1979 *Podagrion,* Krombein *et al.*, Hymen. N. America, 1 : 767.

Venation as in *Torymus* with vein *st* short and knob almost sessile; hind femur strongly swollen, with 6-8 teeth below; middle tibiae strongly curved, tip acutely incised and continues to a pointed tip and before the tip with one spur; tarsal segments 2-5 short or long.

Type-species : Podagrion splendens Spinola

KEY TO SPECIES

1.	Propodeum with an areola	3
	Propodeum without an areola	2
2.	Propodeum without median carina, but with a short, semi-circular carina curving behind around the insertion of petiole	*Podagrion greeni* Crawford
3.	Propodeal areola continued in front as a short or long median carina to meet the anterior costal margin	7
	Propodeal areola not continued in front as a median carina.	4
4.	Areola touching the costal margin	5
	Areola not touching the costal margin	6
5.	Fore wing with vein *pm* about 0.22 of *m*; hind femora with 6 teeth, of which 3-5 are larger than others	*Podagrion opisthacanthum* Masi
	Fore wing with vein *pm* about 0.42 of *m*; hind memora with 7 teeth, of which 1, 6 and 7 are larger than others	*Podagrion dalbergium* Mani & Kaul
6.	Hind femora with 7 teeth, of which 1, 3, 6 and 7 are large	*Podagrion chatterjeei* Mani & Kaul
	Hind femora with 8 teeth, of which 1 and 2 large, seventh tooth largest.	*Podagrion orchesticum* (Masi)
7.	Fore wing with vein *pm* about 0.40 of *m*; hind femora with 8 teeth, of which 1, 4, 5 and 7 are long	*Podagrion calopeplum* Mani & Kaul
	Fore wing with vein *pm* hardly 0.25 of *m*.	8
8.	Hind femora with 10 teeth, of which 1, 5 and 9 are large	*Podagrion ahlonei* Mani & Kaul
	Hind femora with only 5 teeth, of which 4 and 5 are large	*Podagrion chichawatnensis* Mani & Kaul

Podagrion ahlonei Mani & Kaul

(Fig. 44)

1972 *Podagrion ahlonei,* Mani & Kaul, *Orient. Ins.*, 6(3) : 320.

Female Length 3.00 mm. Body black; antennae dark ferruginous-brown; legs and abdomen blackish-brown; femora darker than tibiae and tarsi; tibiae dark brown; tarsus brown; ovipositor dark ferruginous-brown.

Head finely, closely, reticulately punctate; viewed from above almost as wide as thorax, 2 times as wide as long; vertex sinuately

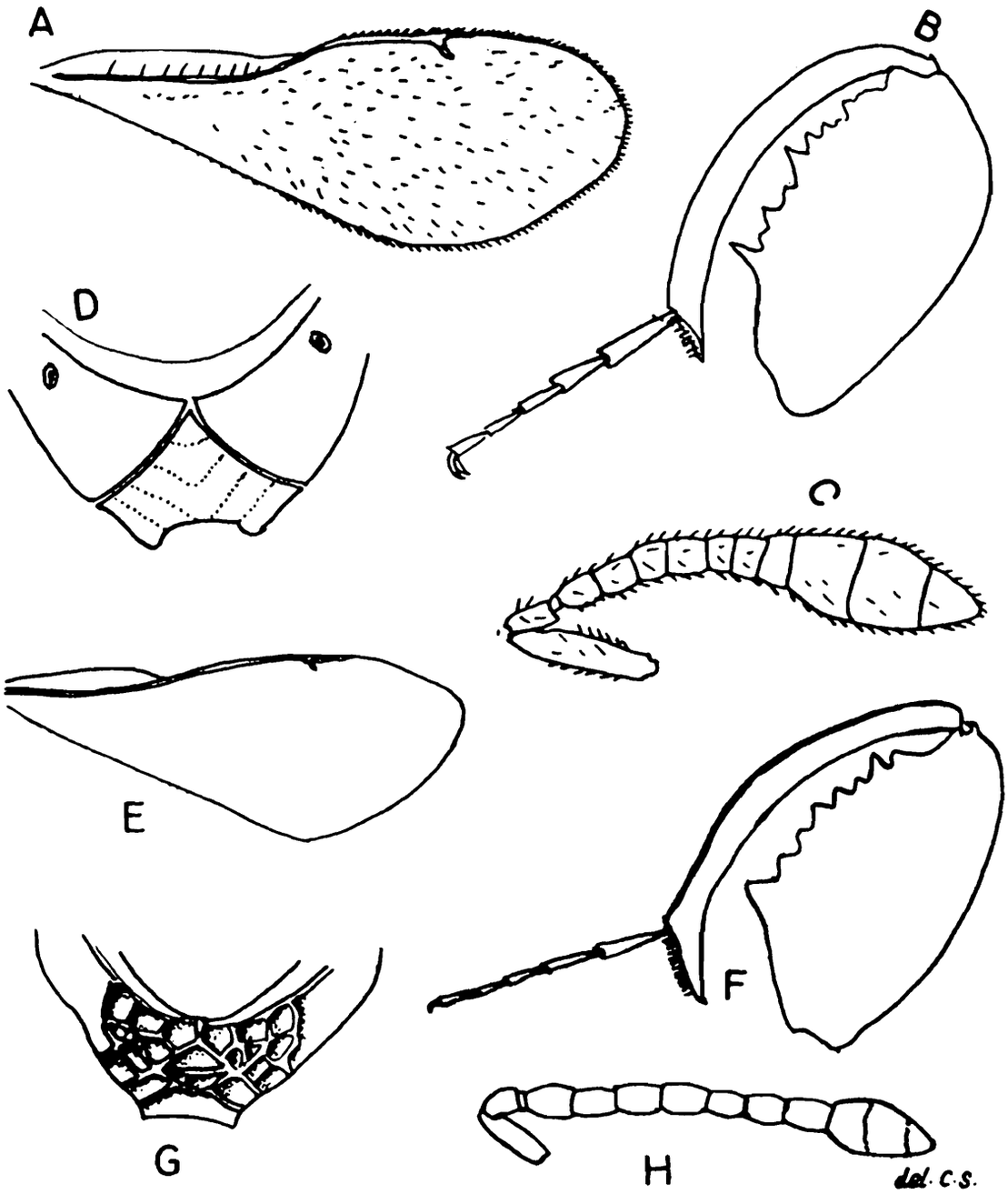

FIG. 44. A-D. *Podagrion ahlonei* Mani & Kaul, female; A. Fore wing; B. Hind leg; C. Propodeum; D. Antenna; E-H. *Podagrion calopeplum* Mani & Kaul, female; E. Fore wing; F. Hind leg; G. Propodeum; H. Antenna.

margined behind; ocellocular space slightly more than ocellar diameter; interocellar space 3 times ocellar diameter; viewed in front nearly orbicular; width to height 4 :3; inner orbital borders parallel; interorbital space about a little less than the orbital length; genal carina distinct; scrobes finely shagreened; face below antennae distinctly finely umbilicately punctate; silvery-white pubescence sparse; viewed from side height a little less than 2 times thickness; postorbital space slightly less than gena; antennae inserted slightly below the middle of orbital length, stout, short, clavate, about 2 times the height of head; segments 13 : 1.1.1.7.3; first and second funicular segments equal to pedicel; third and fourth funicular segments transverse, thicker than long; club nearly equal to the 6 preceding segments combined.

Thorax closely, umbilicately, shallowly punctate; parapsidal furrows complete; scutellum sculpture mostly as on mesonotum, but more finely behind; propodeum with the areola continued in front by a very short median carina to meet the anterior costal margin; disc of areola coarsely reticulate and ribbed, but with sparse transverse striae in the posterior 0.50, mesopleura closely finely punctate; metapleura smooth; fore wing nearly 3 times as long as wide, with the discal ciliation fine and sparse; vein *pm* very short, *m* : *pm* : *st* ratio 30 : 7 : 3; hind coxa 0.75 of femur; femora with 10 teeth : the first, fifth and ninth teeth larger; eighth tooth smallest; tarsal segments slender, not enlarged; metatarsus longest, second segment 0.75 of metatarsus; third and fourth segments subequal; fifth segment a little longer than fourth.

Abdomen somewhat less than 0.50 of the body; ovipositor equal to body.

Male : Unknown.

Type locality : Burma : Ahlone Area, Rangoon

Distribution : Burma

Host : Ootheca of mantid

This species resembles *Podagrion prionomerum* Masi very closely, but differs in lacking the green colour on base of abdomen and presternum, rest of abdomen being brown and not dark blue, in different proportions of the veins, different sculpture of areolar disc on propodeum and relatively longer ovipositor.

Podagrion calopeplum Mani & Kaul

(Fig. 44)

1972 *Podagrion calopeplum,* Mani & Kaul, *Orient. Ins.* 6 (3) : 317.

Female : Length 3.50 mm. Body bright metallic-green; abdomen above in part bluish-green; eyes chocolate-brown; antennae yellowish-brown; scape pale yellow, obscurely and narrowly

darkened below; club dark reddish-brown; legs largely yellowish-brown, except the hind coxa basal 0.50 of which is concolorous with thorax; hind femur slightly darker; abdomen ventrally ferruginous-brown; ovipositor brownish-black.

Head viewed from above distinctly wider than thorax, subquadrate, about 2.50 times as wide as long; vertex finely, closely, shallowly, umbilicately punctate, emarginate behind; interorbital space a little over head length; postorbital space about 0.25 of eye diameter; ocellocular space slightly more than ocellar diameter; interocellar space 3 times the ocellar diameter, front ocellar space subequal to ocellar diameter; viewed in front broadly subtriangular, width to height 8 : 7; inner orbital borders parallel; interorbital space nearly 0.33 of head width; gena to orbit 2 : 7, genal carina fine, complete; gena and clypeus clothed with moderately dense, short, silvery-white setae; front finely, closely reticulately sculptured; viewed from side pyriform, height to thickness 5 : 3; hind margin of eye slightly sinuate; postorbital space 0.50 of the gena; eye length to diameter 4 : 3, antenna inserted in the middle of orbital height, segments 13 : 1 1 1 7.3; scape slender; first 5 funicular segments subequal, each segment about 2 times as long as thick; sixth and seventh funicular segments slightly shorter but each subequal and not transverse; club nearly equal to 2.50 preceding segments combined, much stouter than funicle, swollen in the middle, first 2 segments subequal, terminal segment 0.50 of the second.

Thorax finely, closely reticulately punctate; pronotum transverse, short; mesonotum distinctly wider than pronotum; parapsidal furrows distinct, fine, complete, scutellum concolorous with and sculptured like mesonotum, clothed with silvery-white pubescence, specially at sides and behind, without cross suture; metanotum smooth; propodeum apex of areola continued in front as a very short median carina to meet the anterior costal border of propodeum but not forming an inverted Y; disc of areola broadly reticulate; mesopleura finely shagreened; fore wing about 2.50 times as long as wide, hyaline, discal ciliation short, fine; veins *m* : *pm* : *st* ratio 25 : 10 : 2; fore coxae 0.50 of femora; fore tibiae equal to tarsi and about 0.75 of the femora, middle femora about 0.80 of tibiae; middle tarsi about 0.75 of tibiae; hind coxae subequal to femora, finely reticulate at base externally; femur with 8 black teeth; first, fourth, fifth and seventh teeth distinctly longer than others; metatarsus slender, about 0.33 of tarsus; second to fifth tarsal segments slender, not enlarged, not transverse; second tarsal segment about 0.75 of metatarsus; segments 3-5 each subequal but shorter than second.

Abdomen about 1.50 times as long as high, about 0.50 of body; ovipositor nearly 2 times abdomen and equal to body.

Male Unknown.

Type locality : Kurseong

Distribution : India

Host : Praying mantid

This species is related to *Podagrion epiblum* Masi but is readily separated by the abdomen being metallic-green above, head in front oval or almost circular in outline and the different sculpture of disc of propodeal areola. It also resembles *P. prionomerum* Masi in the pale fore and mid legs, but is at once distinguished by its metallic colour, and much more slender hind coxae.

Podagrion chatterjeei Mani & Kaul

(Fig. 45)

1972 *Podagrion chatterjeei,* Mani & Kaul, *Orient. Ins.* 6 (3) : 325

Female : Length 3.00 mm. Body aeneous-green; antennae reddish-brown, club dark brown; fore and middle legs brown; hind coxae not concolorous with thorax, but blackish-brown with obscure metallic reflections; abdomen dark reddish-brown, with metallic reflections.

Head finely closely punctulate; viewed from above slightly wider than thorax, 2 times as wide as long; interorbital space a little over 0.50 of width of head; ocellocular space equal to ocellar diameter; interocellar space nearly 3 times ocellocular space; front ocellar space equal to ocellar diameter; vertex margined behind; viewed in front distinctly wider than long; eye a little over 2 times as long as wide; scrobes almost reaching front ocellus; viewed from side height to thickness 10 : 7; gena a little less than 0.50 of eye; genal carina complete; antennae inserted a little below the middle of face, with 13 segments : 1.1.1.7.3; scape nearly equal to the first 2.50 funicular segments combined; first 4 funicular segments subequal; fifth segment a little shorter than the fourth; sixth segment equal to fifth but slightly thicker, seventh segment slightly shorter than sixth, club somewhat swollen nearly equal to the preceding 4 segments combined.

Thorax finely, closely, punctate; parapsidal furrows complete; scutellum sculptured like mesonotum; propodeal areola without median carina in front, disc sculptured like mesonotum; mesopluera finely reticulately punctate; metapleura smooth and shiny; fore wing almost 3 times as long as wide; vein *m* : *pm* : *st* ratio 9 : 3 : 1; hind femur 3 times as long as wide, with 7 teeth; first, third, sixth and seventh teeth large; second, fourth and fifth teeth small; fourth smallest; hind tarsus slender, metatarsus equal to the following 2 segments combined; second segment 0.66 of metatarsus; third segment 0.50 of the second; fourth segment smallest; fifth nearly equal to fourth.

Abdomen 0.50 of the body; ovipositor 2.50 times the length of body.

Male : Unknown.

Type locality Dehra Dun

Distribution : Dehra Dun

Host : Praying mantid

This species resembles *Podagrion tainanicum* Masi, but differs in the sculpture of the space inside the areola of propodeum, longer ovipositor, fore femur not concolorous with thorax and hind femur not bluish or metallic green.

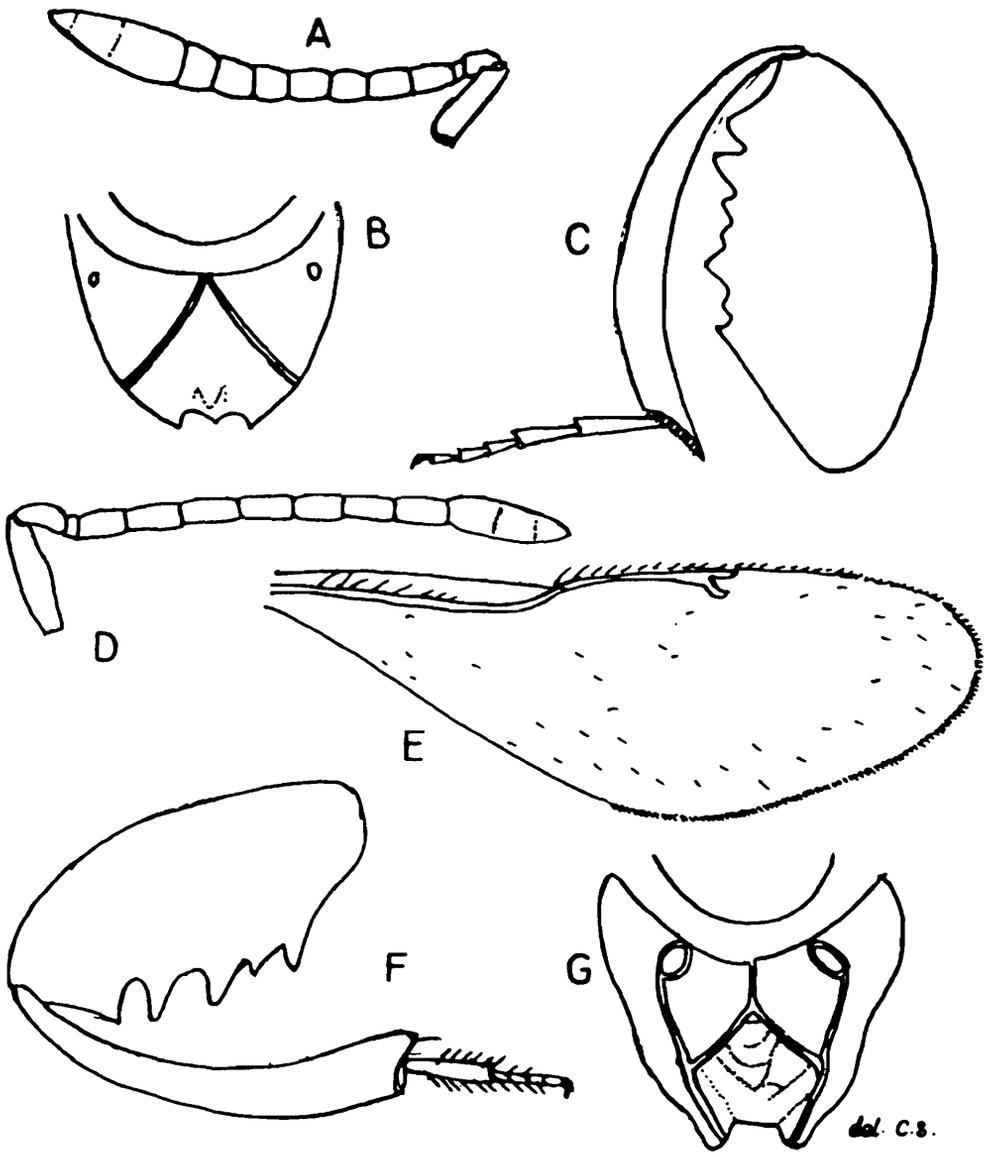

FIG. 45. A-C. *Podagrion chatterjeei* Mani & Kaul, female : A. Antenna; B. Propodeum; C. Hind leg; D-G. *Podagrion chichawatnensis* Mani & Kaul, female; D. Antenna; E. Fore wing; F. Hind leg; G. Propodeum.

Padagrion chichawatnensis Mani & Kaul

(Fig. 45)

1972 *Podagrion chichawatnensis,* Mani & Kaul, *Orient. Ins.,* 6 (3) : 322.

Male : Length 3.50 mm. Body dark aeneous-green; antennae, hind tibia and abdomen dark brown; fore and middle legs and hind tarsi brown; hind coxae concolorous with thorax.

Head finely, closely, punctate; viewed from above almost as wide as thorax, nearly 2 times as wide as long; interorbital space 0.50 of width; of head; ocellocular space equal to ocellar diameter; interocellar space nearly 2 times the ocellocular space; front ocellar space equal to ocellar diameter; postorbital space 0.33 of eye width; vertex slightly sinuately margined behind; viewed in front as wide as long; length of eye 2.50 times its width; scrobes wide, deep and almost reaching vertex; viewed from side height to thickness 7 : 4; gena 0.33 of the eye; genal carina well developed, antennae 0.33 of body, inserted in the middle of face; segments 13 : 1.1.1.7.3; scape about 2 times pedicel, somewhat less than 0.25 of the rest of antenna; first 4 funicular segments subequal, fifth, sixth and seventh segments subequal and slightly shorter than fourth; club equal to the preceding 2.50 segments combined and slightly swollen.

Thorax finely, closely punctulate; parapsidal furrows complete; scutellum sculptured like mesonotum, lacking cross suture before apex; metanotum smooth; propodeum with the areola continued at its apex in front as long median carina to the anterior costal margin; disc of areola with obscure transverse carinae, outside areola finely reticulate mesopleura in upper 0.50 sculptured like mesonotum but smooth below; metapleura smooth, shiny; fore wing nearly 3 times as long as wide; veins *m* : *pm* : *st* ratio 8 : 2 : 1; hind coxae finely shagreened, equal to femur; femora sculptured like coxae but more finely, with 5 teeth, first and second teeth small, second teeth small, second tooth smallest; fourth and fifth teeth long, tarsus slightly less than 0.50 of tibia; metatarsus abruptly much stouter than the rest of tarsal segments and almost 0.50 of tarsus; second, third and fourth segments short, transverse and subequal; fifth segment slightly longer than the preceding 3 segments combined, slender

Abdomen 0.50 of the body.

Female : Unknown.

Type locality : Chichawatni, Punjab

Distribution : Punjab

Host : Mantid

This species resembles *Podagrion viduum* Masi and *P. dispar* Masi. It differs from *dispar* in the fore and mid coxa being not concolorous with thorax, in having 5 and not 4 teeth on hind femur, in the propodeal areolar cross carinae, longer anterior carina, femoral

teeth 1,2 and 3 being equally long, 4 small and long and equal to 3. It differs from *viduum* in the femoral teeth being 5 and not 4, in the fourth tooth being not large and also in the propodeal areola.

Podagrion dalbergium Mani & Kaul

(Fig. 46)

1972 *Podagrion dalbergium*, Mani & Kaul, *Orient. Ins.*, 6 (3) : 323.

Female Length 3.00 mm. Body black with metallic-green reflections; antennae reddish-brown, club brownish-black; fore and middle legs reddish-brown; hind coxae and femora very dark brown with metallic reflections; hind tibiae and tarsi reddish-brown; abdomen dark reddish-brown to blackish-brown, with metallic reflections; ovipositor brownish-black.

Head finely, closely, reticulately punctate; viewed from above slightly wider than thorax, nearly 2 times as wide as long, interorbital space slightly more than 0.50 of head width; ocellocular space equal to ocellar diameter; interocellar space about 3 times the ocellocular space; front ocellar space equal to ocellar diameter; vertex margined behind; viewed in front subtriangular, width to height 9 : 7; inner orbital borders slightly converging above; gena 0.50 of eye; viewed from side height to thickness 5 : 3; gena 0.33 of eye, genal carina complete; postorbital border 0.75 of gena; antennae slightly less than 0.50 of the body, inserted in the middle of face, stout, short; segments 13 : 1 1.1 7.3; scape 0.20 of flagellum; first 2 funicular segments subequal; third to fifth slightly shorter, subequal; sixth nearly as long as thick; seventh transverse; club stout, equal to the preceding 4 segments combined.

Thorax finely, closely, reticulately punctulate; parasidal furrows complete; scutellum sculptured like mesonotum; propodeum with apex of areola contiguous with the anterior costal margin, without median carina in front; disc of propodeum and of areola finely reticulate; mesopleura finely, closely punctate; metapleura smooth; fore wing length to width 5 : 2; veins *m : pm : st* ratio 12 : 5 : 2; hind femur with 7 teeth; first, third, sixth and seventh teeth large; second tooth smallest; hind metatarsus somewhat less than 0.50 of tarsus and almost equal to the following 3 segments combined; second segment about 0.50 of metatarsus; third segment 0.75 of the second; fourth segment shortest but not transverse; fifth nearly equal to the third.

Abdomen almost 0.50 of the body; ovipositor about 2.50 times the body.

Male : Length 2.00 mm. Like female in general body colour and sculpture; antenna 0.50 of body; funicular segments 1-5 subequal; sixth and seventh segments shorter and nearly as thick as

long; club triarticulate, slightly swollen, equal to the preceding 2 segments combined; hind femoral teeth 7; first, third, sixth and seventh teeth large; second tooth somewhat smaller; fourth and fifth teeth smallest; tarsus as in the female.

Type locality : Dehra Dun

Distribution : Dehra Dun

This species resembles *Podagrion tainanicum* Masi but differs in the sculpture of propodeum. It is separated also from *P. opisthacanthum* Masi by the differences in the size of femoral teeth.

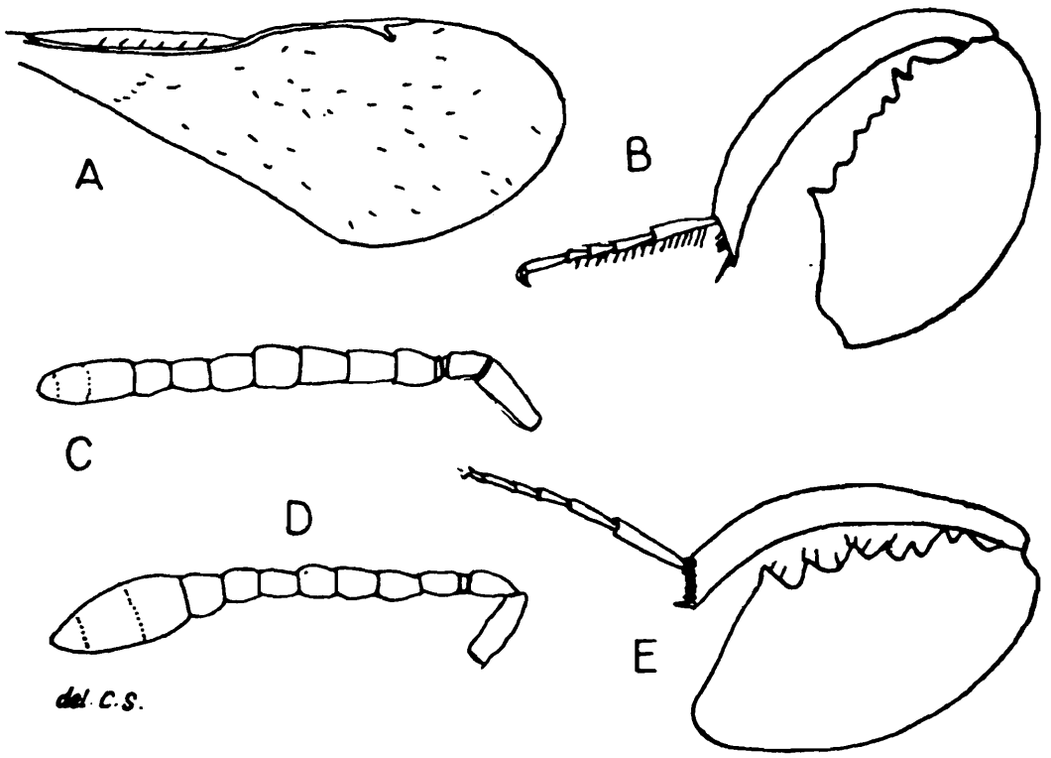

FIG. 46. *Podagrion dalbergium* Mani & Kaul : A-B & D. Female : A. Fore wing; B. Hind leg; C. Antenna; C-E. Male : D. Antenna; E. Hind leg.

Podagrion greeni Crawford

1912 *Podagrion greeni,* Crawford, *Proc. U.S. nat. Mus.,* 42 (1880) : 3.

1938 *Podagrion greeni,* Mani, *Cat. Indian Ins.,* 23 : 41.

1959 *Podagrion ixion,* Fernando, *Ceylon J. Sci.* (Biol.), 2 (1) : 96.

Female : Length 3.50-4.00 mm. Body generally metallic-green to bluish; antennae testaceous; club brown; wings subhyaline with a small infuscate stigmal spot; fore and middle legs testaceous; hind coxae blue; hind femora and tibiae brown; tarsi testaceous; abdomen brown, paler at base; petiole reddish-brown.

Thorax closely punctate; mesonotum and axillae transversely striate at the sides; scutellum reticulate behind; club greatly swollen; propodeum finely closely transversely striate, with umbilicate punctae laterally, without median or 'V'-shaped areola, but with only a semi-

circular carina around base of petiole; hind coxa as long as femora; hind femora with 9-10 teeth, of which 2 or 3 are tubercles; petiole about 0.50 of hind coxa; ovipositor 2 times as long as body.

Male Length 4.00 mm. Antennae red-testaceous; thorax more green than in female; hind femora and tibiae darker and petiole shorter than in female.

Type locality Sri Lanka, Punduloya

Distribution Sri Lanka : Punduloya, Vavuniya

Host : Mantis sp.

Podagrion micans Strand

1911 *Podagrion micans,* Strand, *Arch. Naturg. Berlin,* 77 : 1 (2) : 157.

1938 *Podagrion micans,* Mani, *Cat. Indian Ins.,* 23 : 42.

Female Body 2.50 mm. Ovipositor 5.00 mm. Head and thorax dull dark blue; face partly shiny green; eyes and ocelli red; mesonotum dark blue; legs uniformly bright yellow; antennae bright yellow, but dark above; abdomen shiny red, blue, violet above; below in front brownish-yellow; ovipositor brown; hind femoral teeth black; hind tibia black below; ocellocular space equal to ocellar diameter; abdomen viewed above gradually weakly narrowed behind the middle, strongly narrowed behind; viewed from side longer above than below; hind femora 2 times as long as thickness in the middle.

Type locality Sri Lanka

Podagrion opisthacanthum Masi

1926 *Podagrion opisthacanthum,* Masi, *Konowia,* 26 : 14.

1972 *Podagrion opisthacanthum,* Mani & Kaul, *Orient. Ins.,* 6(3) : 317.

Female Length 3.00 mm. Body metallic-green, with golden reflections; scape orange, funicle yellowish-brown; club brown; eyes red; scutellum margined and propodeum carinae golden; fore femora pale brown; base and tip paler, tibiae yellow; hind coxae and tip of tibiae yellow; femora metallic-green; tarsi yellow; tergites 2-4 brown; petiole yellowish-brown; wings subhyaline.

Head, thorax width ratio 83 : 100; antennae inserted in the middle of the face, interocellar space more than ocellocular space; strongly punctate; mandible tridentate; maxillary palpi with 4 segments; scape about 3.50 times as long as thick; pedicel small, annellus 2 times as long as thick; funicular segments gradually become shorter and thicker; first funicular segment length to thickness ratio 7 : 5; fifth segment subquadrate; club equal to preceding 4.5 segments combined; pronotal collar well developed; propodeum with 2 diverging carinae enclosing behind paired short carinae on each side to form a pentagonal area; thorax minutely

reticulate; fore wing about 0.33 times as long as wide; veins *sm : m : pm : st* ratio 100 : 63 : 14 : 7; hind coxae elongate-ovate; femora distinctly longer, compressed, minutely reticulately squamous, with 6 teeth, of which the first is medium sized, second small, 3, 4 and 5 large, elongate, triangular acute; sixth obtuse triangular; first tergite angularly incised; tergites 2, 3 and 4 short, seventh shortest, ovipositor 2 times the body.

Type locality : Taiwan

Distribution : Taiwan; India : Coimbatore

Host : Mantid.

Podagrion orchesticum (Masi)

1926 *Pachytomoides orchesticus,* Masi, *Konowia,* 5 : 264, fig. 16.
1972 *Pachytomoides orchesticus,* Mani, *Orient. Ins.,* 6 (3) : 317.

Female : Length 3.23 mm. Body metallic-green; eyes red; antennae brown to reddish-yellow; club brownish-black; fore legs pale coloured; hind legs dark blue; hind coxae dark blue; femora and tibiae ochraceous-brown; femoral teeth black; abdomen fuscaous-yellow; ovipositor yellowish-fuscous.

Head, thorax width ratio 100 : 87; viewed in front, head length to width 4 : 5; antennae inserted in the middle of face; pedicel shorter than scape, the following segment not annelliform; the first funicular segment about 2 times as long as thick; fifth segment subquadrate, club stout, equal to the preceding 5 segments combined; thorax robust, width length ratio 100 : 43; minutely reticulate; scutellum frenum divides into unequal parts; propodeum with areola; fore wing about 2 times as long as wide; veins *sm : m : pm : st* ratio 100 : 68 : 26 : 7.5; hind femora minutely punctate, with 8 teeth, of which 2 and 3, 5 and 6 small; seventh longest, first nearly equal and conical; abdomen equal to thorax; ovipositor as long as or much longer than body.

Male : Length 1.70 mm. Antennae yellow; abdomen brown; first funicular segment little longer than thick; second slightly shorter; fore wing with veins *sm : m : pm : st* ratio 100 : 82 : 30 : 8; hind femora with 8 teeth, teeth 6 and 7 connate at base, abdomen 0.75 of thorax.

Type locality : Taiwan

Distribution : Taiwan; India

Host : Mantid.

Podagrion pachymerum (Westwood)

1833 *Priomerus pachymerus,* Walker, *Ent. month. Mag.,* 1 : 118.
1847 *Palmon pachymerus,* Westwood, *Trans. ent. Soc. London,* 4 (4) : 259.
1857 *Bactryischion bicoloratum,* A. costa, *Mem. Accad. Sc. Napoli,* 2 : 226.

1871 *Palmon splendidum,* Walker, *Notes Chalc.,* 2 : 19.
1889 *Podagrion pachymerum,* Dalla Torre, *Cat. Hymen.,* 5 : 370.
1909 *Podagrion pachymerum,* Schmiedeknecht, *Gen. Ins.,* 97 : 117.
1912 *Podagrion pachymerum,* Ruschka, *Verh. zool.-bot. Ges. Wien,* 62 : 239.
1922 *Podagrion pachymerum,* Gahan, *Proc. U.S. nat. Mus.* 61 (45) : 265.
1938 *Podagrion pachymerum,* Mani, *Cat. Indian Ins.,* 23 : 42.

Female : Length 4.38 mm. "Nigro-viridis, abdomine aeneo-viridi, oviducta corpore dimidio longiore, antennis fuscis, pedibus rufis, alis subhyalinis, oculis ocellisque rufis, antennarum clava nigra, scapo rufo, abdomine subtus rugo, coxis nigro-viridibus, thoracis disco obscure viridi, marginibus magis nitidis."

Type locality Europe

Distribution Europe; India

Host : Mantis religiosa

Podagrion repens (Motschulsky)

1859 *Priomerus repens,* Motschulsky, *Etud. Ent.,* 8 : 118.
1871 *Podagrion repens,* Walker, *Notes Chalc.,* 2 : 28.
1909 *Podagrion repens,* Schmiedeknecht, *Gen. Ins.,* 97 : 117.
1938 *Podagrion repens,* Mani, *Cat. Indian Ins.,* 23 : 42-43.

Length 3.30 mm. "Elongatus, compressus, punctulatus, subnitidus, brevissime piliferus, nigro-viridis, abdomen nitidisssimo, metallico-viridi, hoc carina ventrali, coxarum posticarum apice, genibus tarsisque posticis apice pedibus mediis & anticis, alarum basi antennisque rufo-testaceis his apice fusco; oculis rufis."

This species is close to *Podagrion insidiosus* but the abdomen is unicolourous; antennae shorter, femoral spines 7 instead of as in *insidiosus.*

Type locality : Sri Lanka

Distribution : Sri Lanka

Species Incertae Sedis

Podagrion iago Fernando

1957 *Podagrion iago,* Fernando, *Sri Lanka J. Sci.,* 1 (1) : 16-17.

Female : Length 3.30 mm, ovipositor 7.00 mm. Head metallic-blue; face closely finely punctate; mandibles dark brown; eyes red; ocelli yellow; antennae yellowish-brown; club dark brown, with flattened sinsory area on one side; on the other side with sutures; pronotum, mesonotum and scutellum finely punctate; propodeum umbilicately punctate, with median carina; wings hyaline, finely ciliated stigmal spot present; fore and middle legs, including coxae yellow; hind coxa bluish upto middle, rest brown as long as femora;

hind femora dark brown with 9 tooth, first tooth very large; teeth 4-5 united, sixth tooth smallest, short tubecle; hind tarsi yellowish; petiole very short dark brown, a bluish stripe behind it; abdomen yellow; posterior dorsal region dark brown with 2 stripes in middle, an anterior dark brown and a dark blue stripe behind it; posterior end of abdomen with a dark blue spot.

Type locality : Sri Lanka

Podagrion iago resembles somewhat *P. greeni* but differs from it considerably in its colouration.

SUBFAMILY MEGASTIGMINAE

1857 *Megastigmides,* Thomson, *Hymen. Skand.,* 4 :59.
1899 *Megastigminae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 246.
1904 *Megastigminae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 244.
1909 *Megastigminae,* Schmiedeknecht, *Gen. Ins.,* 97 : 118.
1938 *Megastigminae,* Mani, *Cat. Indian Ins.,* 23 : 43.
1979 *Megastigminae,* Krombein, *et al.* Hymen. N. America, 1 : 765.

For wing with vein *st* terminating in a conspicuously large circular knob; hind tibial spur single; vein *pm* equal to or longer than *m;* parapsidal furrows distinct.

The species are parasitic on gallmidges, some breed in seeds, especially of Conifers.

KEY TO GENERA

1. Head and thorax generally smooth or transversely wrinkled or aciculate; mandibles bi- or tridentate.	2
Head and thorax sparsely and very finely punctate; mandibles with 4 teeth.	4
2. Mandibles bidentate.	*Spilomegastigmus* Cameron
Mandibles tridentate.	3
3. Fore wing with distinct speculum.	*Megastigmus* Dalman
Fore wing without speculum.	*Roptrocerus* Ratz.
4. Abdomen subsessile; body elongate; thorax subcompressed; scutellum with a transverse furrow before apex.	*Bootania* Dalla Torre
Abdomen distinctly petiolate, petiole as long as propodeum; abdomen shorter than thorax; elliptical, not compressed; scutellum without distinct transverse furrow before apex.	*Odopoia* Walker

Bootania Dalla Torre

1862 *Metamorpha,* Walker, *Trans. ent. Soc. London,* 1 (4) : 347.
1874 *Metamorpha,* Westwood, *Thes. ent. Oxon.,* 135.
1897 *Bootania,* Dalla Torre, *Wien. ent. Z.,* 16 : 86.

1904 *Bootania,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 245.
1909 *Bootania,* Schmiedeknecht. *Gen. Ins.,* 97 : 120.
1938 *Bootania,* Mani, *Cat. Indian Ins.,* 23 : 44.

This genus is separated from *Megastigmus* and *Spilomegastigmus* by the head and thorax not being rugosely or transversely striate, but punctate; mandible with 4 teeth; scutellum with transverse furrow; abdomen subsessile, elongate, strongly compressed.

"Foem. Corpus laeve, nitens; caput transversum subquadratum, collo distincto, fronte verticali; palpi gracillimi; antennae graciles pubescentes; prothorax subquadratus bene determinatus; humeris rotundatus; mesothorax elongatus; parapsidum suturis distinctissimis; scutello conico, parapteris magnis; metathorax scaber bene determinatus; petiolus brevissimus; abdomen compressum valde gibbosum, thorace brevius; oviductus recurvus longissimus; pedes sat gracilis; alae longae angustae; tibiis calcaribus brevibus apicalibus; coxis postices longis."

"With the humerus emitting into the disc, at a little beyond half its length, a little beyond its length a branch from whence the 2 spurious veins proceed; ulna rather less than 0.33 of the length of humerus; radius extending nearly to the tip of the wings, more than 2 times the length of ulna; cubitus very short, fuscate."

Bootania leucospoides (Walker)

1862 *Metamorpha leucospoides,* Walker, *Trans. ent. Soc. London,* 1 (4) : 347.
1874 *Metamorpha leucospoides,* Westwood, *Thesar. ent. Oxon.* 136, pl. xxv, fig. 8.
1909 *Bootania leucospoides,* Schmiedeknecht, *Gen. Ins.,* 97 : 120.
1938 *Bootania leucospoides,* Mani, *Cat. Indian Ins.,* 23 : 44.

"Foem. Nigra; caput antice flavum, nigro-vittatam, oculis flavo-submarginatis; prothorax flavo-quadrimaculatus; parapsides paraptera et scutellum flavo-marginate; abdomen basi subtusque flavum; segments flavo-marginatis; pedes lutei, coxis flavis nigro-variis, femoribus posticis nigris apice luteis; tibiis tarsisque posticis flavis; alae lurido-cincreae, venis nigris. Length of body 5-6 lines, ovidut 10 lines; expansion of the fore wing 10 lines."

Type locality : Bhutan

Bootanomyia Girault

1915 *Bootanomyia,* Girault, *Mem. Queensland Mus..* 4 : 304.
1949 *Bootanomyia,* Milliron, *Amer. Midland Nat.,* 41 (2) : 261.

This genus was first described by Girault as a subgenus under *Megastigmus* Dalman, but Milliron believes it to be independent, though needing careful revision. According to Girault, the genus is separated from *Megastigmus* by the body partly or wholly metallic coloured and often also umbilicately punctate.

Type-species Bootanomyia smaragdus Girault

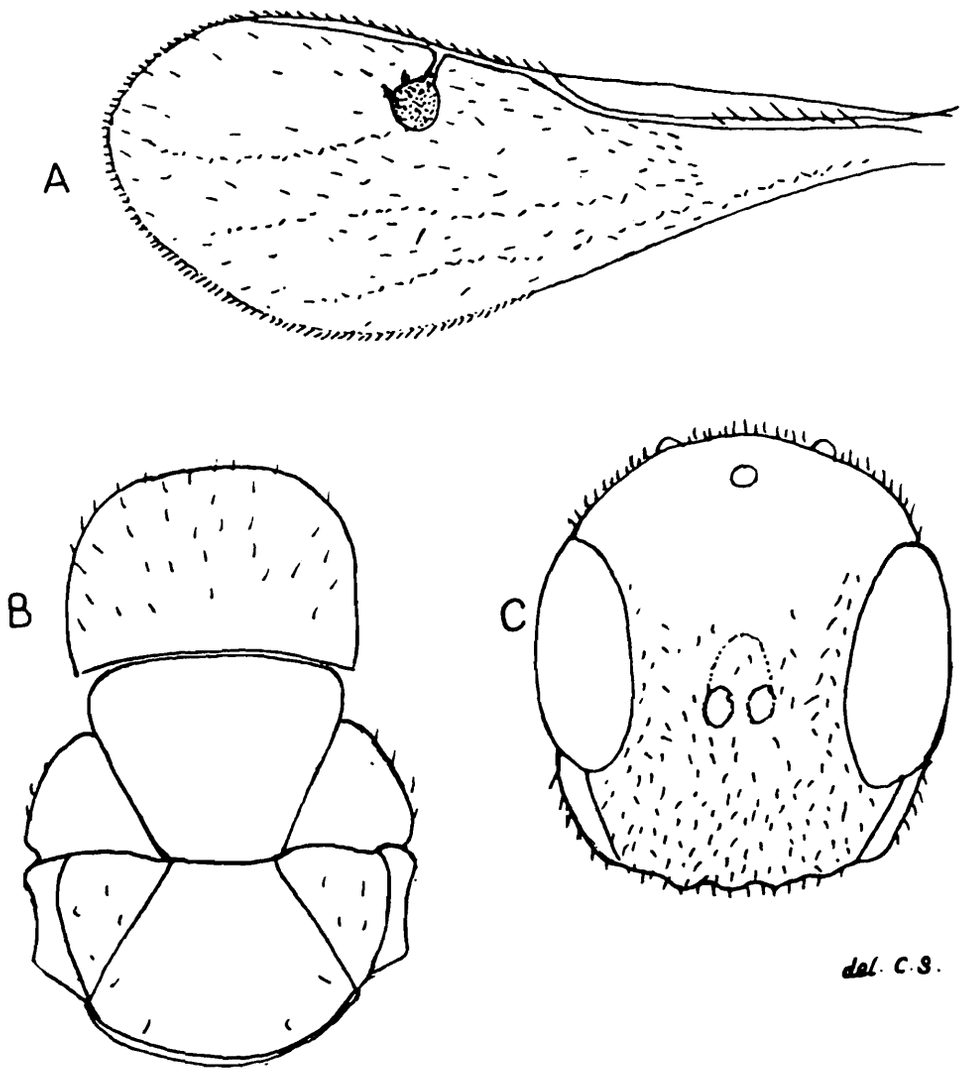

FIG. 47. *Bootanomyia orientalis* Mathur & Hussey, female : A. Fore wing; B. Thorax; C. Head

Bootanomyia orientalis Mathur & Hussey

(Figs. 47 & 48)

1956 *Bootanomyia orientalis,* Mathur & Hussey, *Forest Bull. Dehra Dun* (NS) 212:3.

Female : Length 1.88-2.30 mm; ovipositor 2.50-2.90 mm; body generally metallic-bluish-green; pronotum below yellowish-brown; clypeus and genae pale yellow; eyes crimson; antennae dark brown; abdomen brown, with blue reflections; wings hyaline.

Head viewed in front somewhat longer than wide; vertex, frons and gena reticulate; occiput weakly margined; ocellocular space subequal to interocellar space; scrobe finely reticulate; antennal segments 13 : 1.1.1.7.3.; scape about 3 times pedicel; first 4 funicular

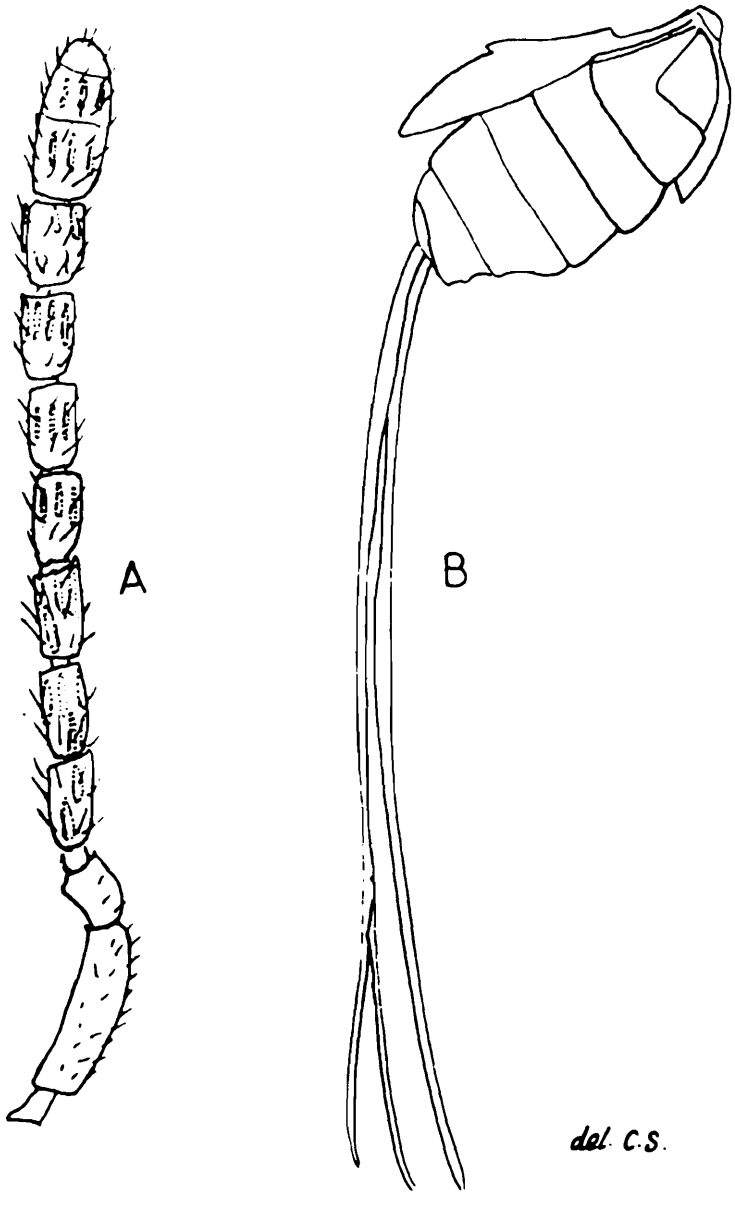

FIG. 48. *Bootanomyia orientalis* Mathur & Hussey, female : A. Antenna; B. Abdomen.

segments subequal; segments 5-7 somewhat shorter and subequal; clypeus in front with a median lobe; thorax strongly reticulate; parapsidal furrows complete; scutellum depressed, closely and finely reticulate, strongly margined apically; hind tibial spur single, shorter than the middle tibial spur; wing length : width ratio 184 : 70; stigma large, elongate-oval; vein *pm* shorter than *m;* abdomen shiny, obscurely reticulate.

Type locality : Puri (Orissa)

Distribution : India; Fiji Islands

Host Bred from seeds of *Casuarina equisetifolia*

Megastigmus Dalman

1798 *Ichneumon* (partim), Fabricius, *Suppl. ent. Syst.*, 231.
1820 *Megastigmus,* Dalman, *Handl. Svenska. Vet. Akad.* 41 : 178.
1874 *Megastigmus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 24 : 129.
1877 *Trogocarpus,* Rondani, *Bull. Soc. ent. Italy,* 9 : 204.
1904 *Megastigmus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 245.
1906 *Megastigmus,* Schultz (emend), *Spol. Hymen.,* 147.
1909 *Megastigmus,* Schmiedeknecht, *Gen. Ins.,* 97 : 118.
1913 *Xanthosomoides,* Girault, *Canad. ent.,* 45 : 220.
1915 *Megastigmus,* Girault, *Mem. Queensland Mus.,* 4 : 297.
1915 *Epimegastigmus,* Girault, *Mem. Queensland Mus.,* 4 : 297, 307.
1979 *Megastigmus,* Krombein *et al.,* Hymen. N. America, 1 : 765.

Head and thorax finely, transversely, rugosely punctate; eyes almost round; scape not reaching front ocellus; mandibles with 3 teeth, the basal teeth minute; scutellum punctate, with a distinct transverse furrow; fore wing with a distinct speculum; metatarsus elongate; tarsal segments 2-4 short; ovipositor strongly exserted; body with yellow markings, rarely metallic-coloured.

Type-species : Megastigmus bipunctatus (Swedrus)

Magastigmus dorsalis (Fabricius)

1798 *Ichneumon dorsalis,* Fabricius, *Suppl. ent. Syst.,* 231.
1905 *Megastigmus dorsalis,* Kieffer, *Ann. Soc. Sci. Bruxelles.* 29 : 182.
1972 *Megastigmus dorsalis,* Mani, *Orient. Ins.,* 6 (3) : 328.

"Caput viride subantennis, nigrum. Antennae nigrae. Thorax niger, obscurus, abdomen nigro aeneum, nitidum aculeo longitudine abdominis. Alae abae puncto costali fusco, pedes flavi femoribus beneis, pallidus capitis thoracisque dorso viridi aeneo, alis macula transversa fusca."

Type locality : Europe

Distribution : India : Chakrata Kumaon Himalaya; Kurseong (Eastern Himalaya); Europe.

Host : Cocoons on *Quercus semecarpifolia,* galls on *Quercus spicata.*

Odopoia Walker

1871 *Odopoia,* Walker, *Notes Chalc.,* 2 : 36.
1904 *Odopoia,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 245.
1909 *Odopoia,* Schmiedeknecht, *Gen. Ins.,* 97 : 120.
1938 *Odopoia,* Mani, *Cat. Indian Ins.,* 23 : 44.

This genus is readily recognized by distinctly petiolate abdomen; abdominal petiole equal to propodeum; abdomen shortly ovate, shorter than thorax, not compressed; sculpture on head and thorax

as in *Bootania;* scutellum like *Spilomegastigmus,* without transverse furrow; ovipositor equal to abdomen; body compact, short, black; fore wing with a dark transverse band.

Type-species : Odopoia atra Walker

Odopoia atra Walker

1871 *Odopoia atra,* Walker, *Notes Chalc.,* 2 : 36.
1909 *Odopoia atra,* Schmiedeknecht, *Gen. Ins.,* 97 : 120.
1938 *Odopoia atra,* Mani, *Cat. Indian Ins.,* 23 : 44.

Type locality : Sri Lanka

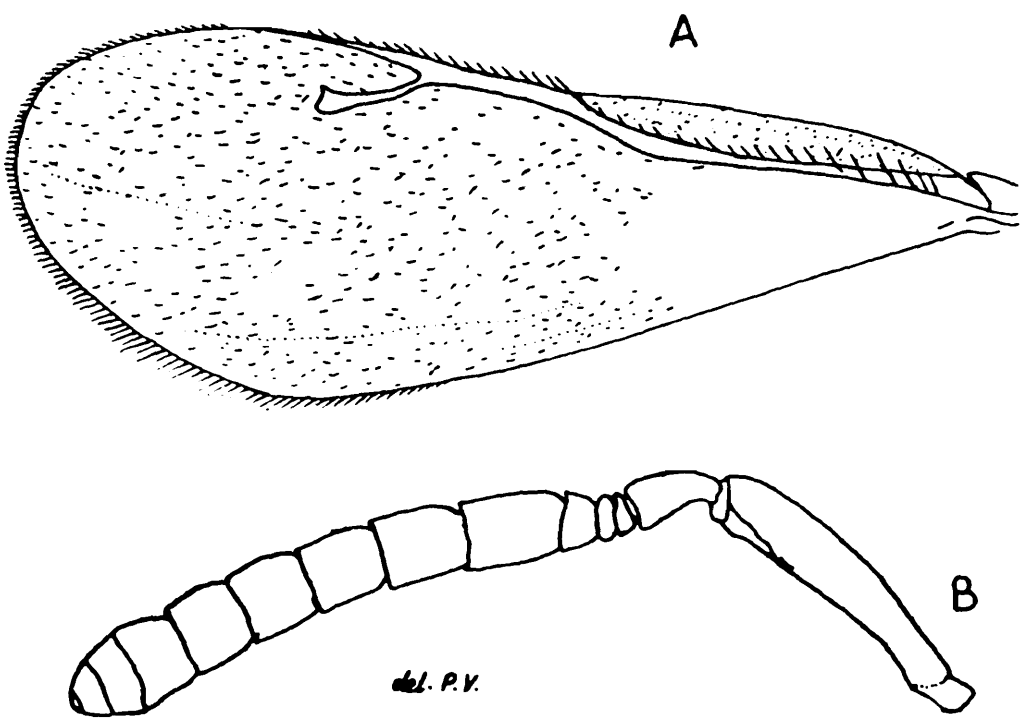

FIG. 49. *Roptrocerus xylophagorum* (Ratzeburg) : A. Fore wing; B. antenna.

Roptrocerus Ratzeburg

1844 *Pachyceras,* Ratzeburg, *Ichneum. Forstins.,* 1 : 217.
1848 *Roptrocerus,* Ratzeburg, *Ichenum. Forstins.,* 2 : 209.
1856 *Roptrocerus,* Förster, *Hym. Stud.,* 2 : 64, 68.
1898 *Roptrocerus,* Dalla Torre, *Cat. Hym.,* 5 : 98.
1904 *Roptrocerus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 323.
1909 *Roptrocerus,* Schmiedeknecht, *Gen. Ins.,* 97 : 360.
1913 *Roptrocerus,* Kurdjumov, *Russk. ent. obzr.,* 13 : 3.
1922 *Roptrocerus,* Waterston, *Indian forest Rec.,* 9 : 84.
1938 *Roptrocerus,* Mani, *Cat, Indian Ins.,* 23 : 104.
1952 *Roptrocerus,* Gyorfi, *Ann. Hist. nat. Mus. natn. Hung.* 2 : 113.
1952 *Roptrocerus,* Nikolskaya, *Chalcid, fauna USSR,* 214.
1963 *Roptrocerus,* Hedqvist, *Stud. For. Suecica,* 11 : 61-70.

1964 *Roptrocerus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 42.
1969 *Roptrocerus,* Graham, *Bull. Brit. Mus. (ent.)* 23 : 423.
1979 *Roptrocerus,* Krombein *et al.,* Hymen. N. America, 1 : 764.

Mandibles tridentate; lower part of face, below antennal sockets, coarsely punctate; antennae with 13 segments; 1.1.3.5.3, inserted in the middle of face, stout, subclavate; funicular segments 3-6 stout, subclavate transverse, club very stout; in male antennae long, filiform; parapsidal furrows complete; hind tibial spur single; fore wing with vein *m* slender, subequal to *pm,* at least 2 times or longer than *st;* propodeal median carina weak; spiracle small, circular; abdomen long; ovipositor long, exserted.

Type-species : Roptrocerus xylophagorum (Ratz.)

Roptrocerus xylophagorum (Ratzeburg)

(Fig. 49)

1844 *Pachyceras xylophagorum,* Ratzeburg, *Ichn. Forstins.,* 1 : 218.
1844 *Pachyceras eccoptogastri,* Ratzeburg, *Ichn. Forstins.,* 1 : 218.
1848 *Roptrocerus xylophagorum,* Ratzeburg, *Ichn. Forstin.,* 2 : 209.
1887 *Roptrocerus rectus,* Provancher, *Addit. Corr. Faune ent. Canada, Hym.,* 202.
1894 *Platygerrhus scolyti,* Ashmead, *Trans. American, Ent. Soc.,* 21 : 335.
1922 *Roptrocerus sulcatus,* Waterston, *Indian forest Rec.* 9 : 85-89.
1938 *Roptrocerus sulcatus,* Mani, *Cat. Indian Ins.,* 23 : 104.
1963 *Roptrocerus xylophagorum,* Hedqvist, *Studia, Forest. Sucecica,* 11 : 66-70.
1964 *Roptrocerus xylophagorum,* Burks, *Canad. ent.,* 95 : 1261.
1969 *Roptrocerus xylophagorum,* Graham, *Bull. Brit. Mus. Nat. Hist. (ent.) Suppl.* 16 : 425.
1978 *Roptrocerus xylophagorum,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 455.
1979 *Roptrocerus xylophagorum,* Krombein *et al.,* Hymen. N. America, 1 : 764.

Female : Length 5.50 mm. Body dark aeneous, metallic-green, coxae, particularly the hind pair blue; wings hyaline; base of abdomen (at sides only) paler; antennae dark except for the orange scape; ovipositor barely lighter than the body; femora especially, the hind smoky; trochanter, tibiae and tarsi paler; moderate-sized species distinguished by the structure of the propodeum.

Head broader than deep (9 : 8), viewed in front broadly oval; orbits not greatly divergent interiorly; at their nearest the eyes are a little over 3.50 diameters apart, while at the base line 4.25; toruli circular, simple, separated by the diameter of either and distant from the orbits and the clypeal edge respectively 3 and 4 diameters; well above the level of lower orbital border and the line across the upper ridges bisects one midway between the anterior ocellus and the middle of the clypeal edge; clypeus narrow, oblong, slightly salient, its edge nearly straight and separated on each side by a shallow dimple from the rest of the mouth edge; anterior margin of clypeus slightly

produced in the middle; antennae with combined length of pedicel and flagellum subequal to width of head; pedicel not or hardly longer than first funicular segment; third annellus longer than either of the others; funicular segments relatively longer, at most 4 and 5 slightly transverse; eye 0.50 of the depth of the head and the malar space 0.25; reticulation everywhere fine and a little raised, coarsest on the vertex, finest above the toruli and generally regular, but below the toruli more transversely drawn out and scaly; only the acute clypeal edge smooth; frons minutely, irregularly pubescent, with about 6 setae along orbit; below antennal socket distinct setigerous puncti; clypeus with about 25 puncti; antennae about 0.33 of body; scape about 5 times as long as thick; pedicel 0.33 of scape; annelli about 0.80 of pedicel; first funicular segment longest, remaining 4 segments subequal; club segments ratio 7 : 4 : 3 : 1; labrum with 4 long bristles; maxillary palpal segments ratio 3 : 4 : 3 : 6; mandible tridentate.

Mesonotum elongate; scutellum widest behind; propodeum on each side of the median carina with 2 triangular areas and sulcus near spiracle; fore wing a little less than 3 times as long as wide; speculum partly open; veins *sm : m : st : pm* ratio 22 : 11 : 6 : 8; hind wing a little over 3 times as long as wide; hind femur behind with some bristles apically; hind tibial spur about 0.33 of metatarsus.

Abdomen smooth in the middle at base; ovipositor sheaths in dorsal vein appear subadpressed, except at tips of the sheaths, where there are several longer, more outstanding bristly hairs.

Type locality : Europe

Distribution : Europe, India : Kumaon Himalaya; N. America

Host : Ips longifolia tunnelling *Pinus longifolia, Ips typographica, Pityogenes chalcographus, Scolytus xyloborus* (see Hedqvist 1963 for host list).

Spilomegastigmus Cameron

1905 *Spilomegastigmus,* Cameron, *Spol. Zeyl.,* 3 : 73.
1909 *Spilomegastigmus,* Schmiedeknecht, *Gen. Ins.,* 97 : 120.
1938 *Spilomegastigmus,* Mani, *Cat. Indian Ins.,* 23 : 44.

Body generally black, head and most of thorax red, abdomen with yellow side spots; head and thorax smooth; mesonotum transversely striate; antennae long; scape slender, reaching front ocellus; clypeus in the middle with a rounded projection; mandibles bidentate; scutellum with a transverse furrow, smooth; legs long and slender; last abdominal segment ploughshare-shaped; ovipositor 2 times the body.

Type-species : Spilomegastigmus ruficeps Cameron.

Spilomegastigmus ruficeps Cameron

1903 *Spilomegastigmus ruficeps,* Cameron, *Spol. Zeyl.,* 3 : 74, pl.A, fig. 3.
1909 *Spilomegastigmus ruficeps,* Schmiedeknecht, *Gen. Ins.,* 97 : 120.
1938 *Spilomegastigmus ruficeps,* Mani, *Cat. Indian Ins.,* 23 : 44.

Length 6.00 mm. Body black; head, scape, pronotum and mesonotum, mesopleura, scutellum red; legs yellow; femora somewhat rufous; abdomen laterally with 4 yellow marks, second largest, circular; apicular pair long, narrow; wing with an oblique cloud at stigma in female; ovipositor fringed by black hairs.

Frons excavate in the middle with a keel; sides convex; head wider than thorax; mesonotum transversely striate.

Type locality : Sri Lanka : Kandy
Distribution : Sri Lanka
Host : Unknown.

SUBFAMILY ORMYRINAE

1856 *Ormyroidae,* Förster, *Hymen. Stud.,* 2 : 19, 22, 24.
1875 *Ormyrides,* Thomson, *Hymen. Skand.,* 4 (1) : 100.
1899 *Ormyrinae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 247.
1904 *Ormyrinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 245.
1909 *Ormyrinae,* Schmiedeknecht, *Gen. Ins.,* 97 : 121.
1938 *Ormyrinae,* Mani, *Cat. Indian Ins.,* 23 : 45.
1979 *Ormyrinae,* Krombein *et al.,* Hymen. N. America, 1 : 769.

The Ormyrinae occupy anomalous place in *Torymidae.* They agree with Torymids only in the wing venation and habits; the main character is the absence of or indistinctly developed parapsidal furrows; ovipositor not exserted; abdomen conic-ovate or acutely pointed, with peculiar sculpture; the middle tergites usually with transverse rows of rounded punctae; vein *st* very short.

KEY TO GENERA

1. Females; abdomen long, conically produced; more or less compressed, especially towards tip; ovipositor not prominent — 2
   Males; abdomen oblong, depressed — 5
2. Abdominal tergites without a peculiar sculpture — 4
   Abdominal tergites with a peculiar sculpture; some tergites with transverse rows of deep pits — 3
3. Base of middle abdominal tergites with coarse pits; antennae with 2 annelli — *Ormyrus* Westwood
   Base of abdominal tergites without large coarse pits; antennae with only a single annellus — *Monobaeus* Förster
4. Abdominal tergites finely punctate; antennae with 3 annelli — *Tribaeus* Förster

5. Abdominal tergites without a peculiar sculpture	7
Abdominal tergites with peculiar sculpture	6
6. Antennae with 2 annelli	*Ormyrus* Westwood
Antennae with a single annellus	*Monobaeus* Förster
7. Abdomen finely punctate; antennae with 3 annelli	*Tribaeus* Förster

Ormyrus Westwood

1832 *Ormyrus,* Westwood, *Philos. Mag.,* 1 : 127.
1833 *Periglyphus,* Boheman, *Handl. Svensk. Vet.-Akad.,* 54 : 378.
1834 *Siphonura,* Nees, *Hymen. Ichneum. Affin. Mon.* 2 : 81.
1840 *Cyrtosoma,* Perris, *Ann. Soc. Ent. France,* 9 : 96.
1904 *Ormyrus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 245.
1909 *Ormyrus,* Schmiedeknecht, *Gen. Ins.,* 97 : 122.
1938 *Ormyrus,* Mani, *Cat. Indian Ins.,* 23 : 45.
1951 *Wania,* Risbec, *Mem. Inst. Franc. d'Afr. Noire,* 13 : 294.
1979 *Ormyrus,* Krombein *et al.,* Hymen. N. America, 1 : 769.

Body stout, metallic; head transversely rounded; scrobe not deep; antennae stout, short with 2 annelli; scape not reaching front ocellus; funicular segments transverse; mandibles bidentate, basal tooth broad and truncate, apical tooth acute; parapsidal furrows indistinct; mesopleura polished, not divided; fore wing hyaline, with vein *pm* and *st* very short; hind tibiae with 2 stout curved spurs; abdomen oval, in female conically pointed; the first 2 tergites fused together, the middle tergites with 2 or 3 transverse rows of acute grooves or pits; ovipositor slightly acutely projecting. Species mostly in galls of *Quercus* spp.

Type-species *Ormyrus punctiger* Westwood

Ormyrus orientalis Walker

(Fig. 50)

1971 *Ormyrus orientalis,* Walker, *Notes Chalc.,* 4 : 68.
1909 *Ormyrus orientalis,* Schmiedeknecht, *Gen. Ins.,* 97 : 123.
1938 *Ormyrus orientalis,* Mani, *Cat. Indian Ins.,* 23 : 45.
1972 *Ormyrus peninsularis,* Mani & Kaul, *Orient. Ins.,* 6 (3) : 328.

Female : Length 2.25 mm. Body dark metallic-green; antennae black; tibiae dark reddish-brown; hind tibial spurs reddish-brown; hind tibial spur reddish-brown; tarsi whitish; venation brownish-black; abdomen densely clothed with long silvery-white setae.

Head viewed from above transverse, distinctly narrower than thorax, 2.50 times as wide as long; interorbital space to head width 40 : 63; ocellocular space distinctly more than the ocellar diameter; interocellar space 4 times the ocellocular; front ocellar space about

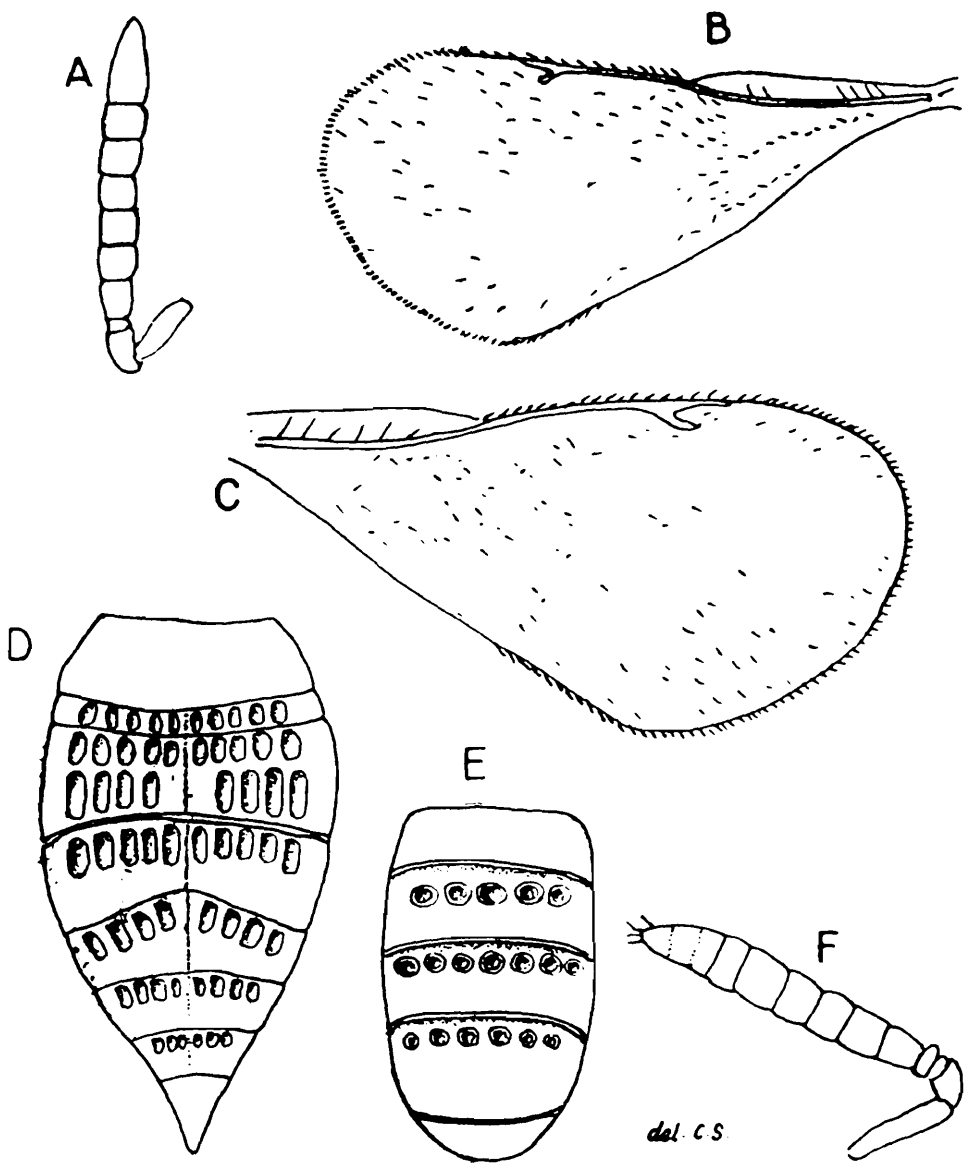

FIG. 50. *Ormyrus orientalis* Walker : A. Antenna, male; B. Fore wing, male; C. Fore wing, female; D. Abdomen, female; E. Abdomen, male; F. Antenna, female.

0.50 of the interocellar; ocelloccipital space about 0.33 of the width of eye; vertex finely, closely, transversely striato-punctate; viewed from the front width to length 5 : 4; inner orbital borders nearly straight, parallel; frons somewhat concave; scrobe wider below than above; viewed from the side height to thickness 9 : 5; gena nearly 0.50 of the eye, carina conspicuous, finely longitudinally striate; antenna inserted a little above the lower orbital borders, short, moderately stout; scape about 0.25 of the flagellum; antennal segments 13, including 2 annelli; pedicel nearly 0.33 of the scape; first annellus smaller and narrower than the second; first 5 funicular

segments subequal, but the second onwards somewhat thicker; sixth a little shorter and transverse; club triarticulate, reduced apically and nearly equal to the preceding 2 segments combined.

Thorax length to width 3 : 2.5; pronotum short transverse; mesonotum obscurely punctate; parapsidal furrows evanescent anteriorly and faint behind; scutellum punctate like mesonotum; mesopleura smooth; metapleura finely striate; fore wing slightly more than 2 times as long as wide; veins *sm : m : pm :* 6 : 5 : 1 ; *st* very short, stigma almost sessile; *sm* with 9 long, stiff setae; hind coxae finely striate; femora and tibiae subequal; tibiae with short, stiff spines externally in the middle and apically; longer tibial spur 0.50 of metatarsus, shorter spur 0.50 of the longer spur; tarsus 0.75 of tibia, metatarsus 0.33 of tarsus, second tarsal segment 0.50 of metatarsus, third slightly shorter, fourth shortest and 0.33 of metatarsus; fifth segment slightly longer

Abdomen viewed from above slightly more than 0.50 of body, with a conspicuous median longitudinal carina reaching nearly to tip; first tergite finely, closely, reticulately punctate; other tergites with rows pits viewed from the side length to thickness 5 : 3; tip produced short.

Male : Length 2.00 mm. Like female, except for the absence of the median carina on dorsum of abdomen, which is also depressed, tip of abdomen obtuse; in addition to the characteristic sculpture, abdomen minutely closed punctate; first tergite as in female.

Type locality : Sri Lanka

Distribution : Sri Lanka : India : Poona, Madras, Kollimalai Hills, Tanjore, Nilgiri Hills, Walayar Hills, Anaikatti, (Coimbatore), Palghat, Valparai, Munnar, Berijam (Kodaikanal Hills), Khandala (W Ghats), Thana Krishnagiri Hills (Bombay).

Host : Unknown.

It differs from *O. philippinensis* Hedqvist in the sculpture of abdomen, proportions of antennal segments and veins and colour

FAMILY LEUCOSPIDIDAE

1833 *Leucospidae,* Walker, *Ent. Mag.,* 2 : 13.
1839 *Leucospididae,* Haliday, *Hym. Synop.* 2.
1846 *Leucospididae,* Walker, *List Chalc. Brit. Mus.,* 1 : 1.
1856 *Leucospoidae,* Förster, *Hym. Stud.,* 2 : 18, 20, 29.
1886 *Leucospinae,* Howard, *Ent. Amer.,* 1 : 197.
1897 *Leucospidinae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 235.
1922 *Leucospidinae,* Weld, *Proc. US Nat. Mus.,* 61(6) : 1-43.
1904 *Leucospidinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 247.
1909 *Leucospidinae,* Schmiedeknecht, *Gen. Ins.,* 97 : 13.
1935 *Leucospidinae,* Mani, *Rec. Indian Mus.,* 37 : 242.
1974 *Leucospidae,* Boucek, *Brit. Mus. Bull. Ent.,* 23 :
1979 *Leucospididae,* Krombein *et al.,* Hymen. N. America, 1 : 874.

Large Chalcids, generally black or brown, marked yellow or red, rarely with metallic sheen; body generally rugose or punctate and densely hairy; eyes pubescent; scrobes deep, with carinate margins; antennae with 13 segments : 1.1.8.3; pronotum large, generally with transverse carinae; sides parallel or only very little converging in front; parapsidal furrows often incomplete; scutellum without frenum; axillae short; metanotum differentiated into dorsellum, which is sometimes carinate or dentate; propodeum rugoso-punctate, densely hairy, generally without median longitudinal carina; mesopleura with deep femoral impression; hind coxa large, often with a dorsal tooth; hind femora greatly enlarged, dentate below; hind tibia curved, with a carina ventrally, hind tibial spurs 2; tarsi with 5 segments; wings densely hairy; fore wings when in repose folded longitudinally as in wasps, with long vein *sm,* long *pm,* short *m*, which is shorter than *st*; abdomen sessile; first tergite large; in female second tergite concealed, in male second tergite small but not concealed; third tergite short; fourth tergite exposed; fifth tergite longest and forming the thickest part of abdomen; ovipositor sheaths long, bent upward and forward and when at rest in a furrow on the dorsum of thorax.

The Leucospididae are generally parasitic on Hymenoptera-Aculeata, mainly bees, solitary wasps like Eumenidae, Sphegidae, etc., rarely also parasitic bees like *Stelis, Coelioxys,* etc. Parthenogenesis has been reported in *Leucospis gigas* Fab. The family is largely tropical in distribution, but many species occur in subtropical and temperate regions also. The genera *Polistomorpha* Westwood, *Leucospis* Fabricius, *Neleucospis* Boucek and *Micrapin* Kriechbaumer are included in the family. The genus *Marres* Walker was removed from the family by Menon (1949).

Leucospis Fabricius

1775 *Leucospis,* Fabricius, *Syst. Ent.*, 1 ; 361.
1780 *Coelogaster,* Schrank *Shcr. Ges. Naturf. Fr. Berlin,* 1 : 303.
1839 *Metallopsis,* Westwood, *Z. Ent.*, 1 : 264.
1874 *Leucospis,* Westwood, *Thes. Ent. Oxon.*,135.
1890 *Leucospis,* Schletterer, *Berlin. ent. Z.*, 35 : 141.
1894 *Exochlaenus,* Shipp, *Ent. month. Mag.*, 30 : 245.
1904 *Leucospis,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 247.
1904 *Exoclaenus,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 247.
1909 *Leucospis,* Schmiedeknecht, *Gen. Ins.*, 97 : 14.
1915 *Parexochlaenoides,* Girault, *Mem. Queensland Mus.*,4 : 356.
1915 *Parexochlaenus,* Girault, *Mem. Queensland Mus.*, 4 : 245.
1915 *Epexochlaenoides,* Girault, *Mem. Queensland Mus.*, 3 : 357.
1922 *Leucospis,* Weld, *Proc. US Nat. Mus.*, 60 (6) : 4-35.
1935 *Leucospis,* Masi, *Boll. Lab. Ent. Ital.*, 67 : 36-43.
1937 *Leucospis,* Mani, *Rec. Indian Mus.*, 39 : 46.
1938 *Leucospis,* Mani, *Cat. Indian Ins.*, 23 : 46.
1975 *Leucospis,* Boucek, *Brit. Mus. Bull.* (Ent.) 23 : 28.

Body non-metallic, rarely metallic-coloured; maxillary palpi with 4 segments; antennae with 12 segments; pronotum with or without transverse carinae and depressions; scutellum without transverse carinae; propodeum with distinct median longitudinal carina; hind femur large, with teeth or pectines below; basal tooth before the middle; hind tibia with the outer spur reduced, shorter than the inner spur; abdomen compressed, with 8 tergites, first tergite narrow forming a constriction, third and fourth tergites telescoped, sixth tergite largest; ovipositor sometimes short, but generally long and upturned and held forward over dorsum of abdomen and thorax.

Type-species *Leucospis dorsigera* Fab.

KEY TO SPECIES

1.	Body largely metallic-coloured violet and partly also green	*Leucospis regalis* Westwood
	Body never metallic coloured wholly, but largely black, with white, yellow or red spots and markings	2
2.	Hind femora with the first tooth generally small, followed by 3-4 longer teeth; pronotum without discal transverse carina	3
	Hind femora with the first tooth most usually larger than others, pronotum with a discal transverse carina	8
3.	Frons generally with yellow at least partly	4
	Front without yellow	7
4.	Dorsellum rounded behind; hind coxal depression with a smooth medioposterior area without punctae; pair of grooves on the first tergite diverge in front and separated by a coarsely punctate ridge	*Leucospis histrio histrio* Maindron
	Dorsellum emarginate or bidentate behind; hind coxae without a smooth area; first tergite grooves separated in front by an obtuse smooth keel	5
5.	Hind femora finely punctate outside; dorsellum emarginate behind	*Leucospis darjilingensis* Mani
	Hind femora coarsely punctate outside; dorsellum bidentate	6
6.	Funicular segments 2-4 longer than thick; ovipositor short	*Leucospis gigas* Fabricius
7.	Hind femora finely and densely punctate; hind coxal tooth often rudimentary, hind coxal depression smooth	*Leucospis petiolata* Fabricius
8.	Hind tibiae not produced into a spine apically; hind femora with minute teeth beyond the large basal tooth	9
	Hind tibiae truncate or acuminate apically; hind femora with regular, well separated teeth beyond the basal tooth	11

9. Front ocellus separated from the top of scrobe by at least 0.50 or more of its own diameter; dorsellum not distinctly carinate; ovipositor hardly reaching the front margin of the fifth tergite — *Leucospis pyriformis* (Weld)

   Front ocellus closer to the scrobe than 0.50 of its own diameter; dorsellum carinate, bidentate — 10

10. Face with short dense fine pubescence in addition to the scattered longer hairs — *Leucospis pediculata* Guerin-Meneville

11. Antennae in female short; second funicular segment hardly transverse; the following funicular segments distinctly transverse — *Leucospis bombayensis* Mani

    Antennae in female long; funicular segments 2-4 longer than thick — *Leucospis guzeratensis* Westwood

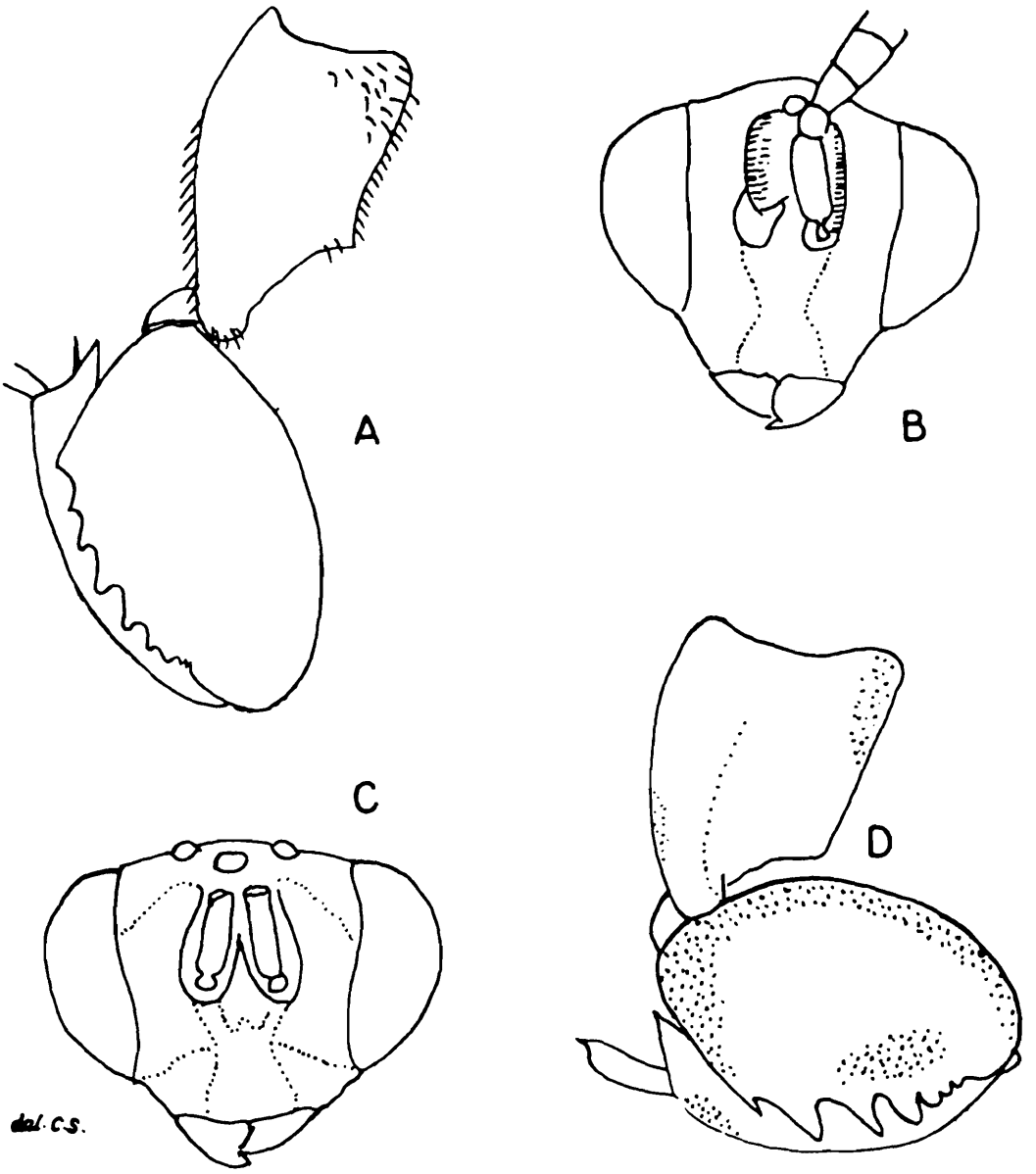

FIG. 51. A-B. *Leucospis regalis* Westwood : A. Hind leg; B. Head in front view; C. *Leucospis darjilingensis* Mani, female, head in front view; D. *Leucospis histrio histrio* Maindron, female, hind leg.

Leucospis regalis Westwood

(Fig. 51)

1894 *Leucospis regalis,* Westwood, *Thes. Ent. Oxon.,* 135.
1912 *Leucospis viridissima,* Enderlein, *Ent. Mitt.,* 1 : 144-146.
1974 *Leucospis regalis,* Boucek, *Bull. Brit. Mus.* (Ent.) 23 : 162.

Body bright metallic-violaceous, sides green; scutellar hind margin laminately raised up; hind coxa with a slender tooth above, smooth in depressed area; vertex golden-yellow; pronotum in front of the premarginal carina depressed; hind femoral teeth not long; first tooth shorter than the middle tooth; fourth and fifth teeth longer than others; sixth tooth tridenticulate, vertex sometimes concolorous with thorax, violaceous or with traces of bright green.

Type locality : Camiguin (Philippines)
Distribution : Philippines, Sri Lanka.

Leucospis histrio histrio Maindron

(Fig. 51)

1878 *Leucospis histrio,* Maindron, *Bull. Soc. Ent. France,* 1878 : 30.
1890 *Leucospis macrodon,* Schletterrer, *Berl. ent. Z.,* 35 : 141-302, pl. v-vi.
1903 *Leucospis erythrogastra,* Cameron, *J. Str. Branch R. Asiatic Soc.,* 39 : 89-181.
1911 *Leucospis rufitarsis,* Strand, *Int. Ent.,* 5 : 168.
1922 *Leucospis ornatifrons,* Weld, *Prog. US Nat Mus.,* 61 (6) : 22.
1925 *Leucospis malabarensis,* Brues, *Psyche,* 32 : 27.
1935 *Leucospis ornatifrons,* Mani, *Rec. Indian Mus.,* 37 : 245.
1935 *Leucospis meenakshiae,* Mani, *Rec. Indian Mus.,* 37 : 245.
1935 *Polistomorpha indica,* Mani, *Rec. Indian Mus.,* 37 : 243, fig. 1.
1936 *Polistomorpha indica,* Mani, *Rec. Indian Mus.,* 38 : 338.
1936 *Leucospis assamensis,* Mani, *Rec. Indian Mus.,* 38 : 339.
1937 *Polistomorpha indica,* Mani, *Rec. Indian Mus.,* 39 : 290.
1937 *Leucospis ornatifrons,* Mani *Rec. Indian Mus.,* 39 : 295.
1938 *Leucospis assamensis,* Mani, *Cat. Indian Ins.,* 23 : 146.
1938 *leucospis ornatifrons,* Mani,*Cat. Indian Ins.,* 23 : 146.
1938 *Leucospis malabarensis,* Mani, *Cat. Indian Ins.,* 23 : 47.
1938 *Leucospis meenakshiae,* Mani, *Cat. Indian Ins.,* 23 : 48.
1938 *Polistomorpha indica,* Mani, *Cat. Indian Ins.,* 23 : 46.
1974 *Leucospis histrio,* Boucek, *Bull. Brit. Mus.* (Ent.) 23 : 164.
1974 *Leucospis histrio histrio,* Boucek, *Bull. Brit. Mus.* (Ent.) 23 : 166.

Female : Length 7.50 mm. Body generally black; eyes dark brown; fore wings smoky beyond the basal 0.50; yellow spots and markings as follows : small, oblong spots on frons above; moderately narrow transverse yellow band anteriorly on pronotum, reaching almost to the sides; narrow transverse bands on either ends of the carina on pronotum, becoming obsolete in the middle; transverse yellow bands behind on scutellum, broader at the sides than in the

middle; funicle dark reddish-brown; fore coxae testaceous; femora dark brown, except for an elongate triangular yellowish-brown spot apically; tibiae dark testaceous except in front, where it is yellowish-brown in the whole length; middle leg similar to the fore leg, but coxae darker and the yellow on tibia is broader; hind coxae reddish-brown except for a basal yellow spot above; hind femora olive-brown except for a large irregular, basal yellow spot outside continuing anteriorly to apex and except for an oblong spot behind immediately above tooth 4; yellow line on hind tibia, from the basal 0.33 becoming broader apically; 3 transverse yellow bands on the abdomen, the anterior broad and short, the middle broader and longer and the posterior band narrow and long; small crescent-shaped spot subapically on mid dorsum.

Body shiny, sparsely hairy; head umbilicately punctate, villous; frons more hairy than occiput; eyes finely pubescent; antennae about 1.50 times the height of head; segments 12 : 1.1.7.3; thorax much sculptured; pronotum with one transverse carina, parallel to the hind margin and faint at ends; more closely punctate than scutum, not depressed conspicuously in front of premarginal carina; scutellum punctate like pronotum; dorsellum rounded behind; hind coxae densely and finely punctate; dorsal edge thin behind but without a tooth; hind femur finely punctate; with 4 simple and one compound teeth; first tooth short; second tooth long and acute; third tooth longer and more acute; fourth tooth short and obtuse; fifth tooth tridenticulate; hind tibia equal to femur; tip of hind tibia obliquely produced into a spine; abdomen shiny, densely and finely punctate; first tergite with a pair of broad longitudinal furrows for ovipositor, diverging in front and separated by a wide coarsely punctate ridge.

Type locality : Maluku (Tidore Island)

Distribution : India, Bangladesh, Burma, Sri Lanka, South China, Thailand, Malaysia, Sumatra, Java, Celebes, New Britain, Moluccas, New Guinea, Philippines, Solomon Islands

Hosts : Megachile, Ctenoplectra chalybea Smith

Leucospis darjilingensis Mani

(Figs. 51 & 53)

1937 *Leucospis darjilingensis,* Mani, *Rec. Indian Mus.,* 39 : 294.
1974 *Leucospis darjilingensis,* Boucek, *Bull. Brit. Mus.* (Ent.) 23 : 148.

Female : Length 8.00 mm. Body black, with the following spots and markings in yellow: a broad irregular band, broadest in front and extending across the upper margin to apex; a stripe posteriorly from base to tip outside on the hind tibia; scape below; 2 oblique-oblong stripes on tergite 8; frons between eyes and scrobes with brick-red markings, wider below than above; other brick-red margins are as follows: a broad curved transverse band anteriorly on pronotum;

a darker band posteriorly on pronotum; a curved band along the hind margin on scutellum; an elongated spot on mesopleura; short stripes above and below on fore femora; fore tibia and fore tarsus in front; middle tibia in front and middle tarsus; hind coxa above at base and below apically; hind tarsus first tergite with 2 yellow streaks converging to outer margins of the base of median furrow; paired oblique bands on tergite 2 beginning anteromedially and extending lateroposteriorly and narrow in front and broad apically; narrow transverse band on tergite 5; a broad transverse band posteriorly on tergite 6.

Head somewhat wider than pronotum; viewed in front transverse; frons rugose; scrobes carinately margined; postocellar space equal to ocellar diameter; front ocellus outside of the scrobe; inner orbital margin sinuate; occipital carina faint; striations on the outer side of lateral ocelli conspicuous; frontovertex distinctly wider than height of head in side view and transverse; head densely pubescent; antennae short; flagellar 3 subquate, segments beyond 4 transverse, frontovertex wider than eye diameter

Pronotum about 0.75 of mesonotum, with one faint transverse carina parallel to hind margin, which is also carinate; pronotum and mesonotum closely rugosopunctate; dorsellum behind slightly emarginate; propodeum without median longitudinal carina, but with lateral carinae; hind coxae closely minutely punctate; hind femora about 2 times as long as thick, with dense, but fine setigerous punctae; teeth straight; first tooth small, second tooth long and obtuse; third and fourth teeth longer and acute; fifth tooth tridenticulate; fore wing faintly clouded apically.

Abdomen about 2 times as long as its maximal width; tergite 2 longest, with median longitudinal sulcus for ovipositor; tergites 3 and 4 concealed; abdomen viewed from the side narrow at base and stout apically; finely punctate, more densely pubescent apically than basally; ovipositor reaching forward to the basal 0.25 of tergite 2.

Type locality Darjiling (East Himalaya) 900 m above mean sea-level.

Leucospis gigas Fabricius

(Fig. 53)

1793 *Leucospis gigas,* Fabricius, *Ent. Syst.*, 2 : 245.
1814 *Leucospis grandis,* Klug, *Mag. Ges. naturf. Fr. Berlin,* 6 : 66.
1814 *Leucospis varia,* Klug, *Mag. Ges. naturf. Fr. Berlin,* 6 : 67.
1834 *Leucospis nigricornis,* Walker, *Ent. Mag.*, 2 : 16.
1834 *Leucospis shuchardi,* Westwood, *Ent. Mag.*, 2 : 214.
1839 *Leucospis rufonotata,* Westwood, *Z. Ent.*, 1 : 245.
1906 *Leucospis quettaensis,* Cameron, *J. Bombay nat. Hist. Soc.*, 17 : 91.
1906 *Leucospis nursei,* Cameron, *J. Bombay nat. Hist. Soc.*, 17 : 92.
1909 *Leucospis gigas,* Schmiedeknecht, *Gen. Ins.*, 97 : 16. pl. I, fig. 5.
1974 *Leucospis gigas,* Boucek, *Bull. Brit. Mus.* (Ent.) 23 : 149.

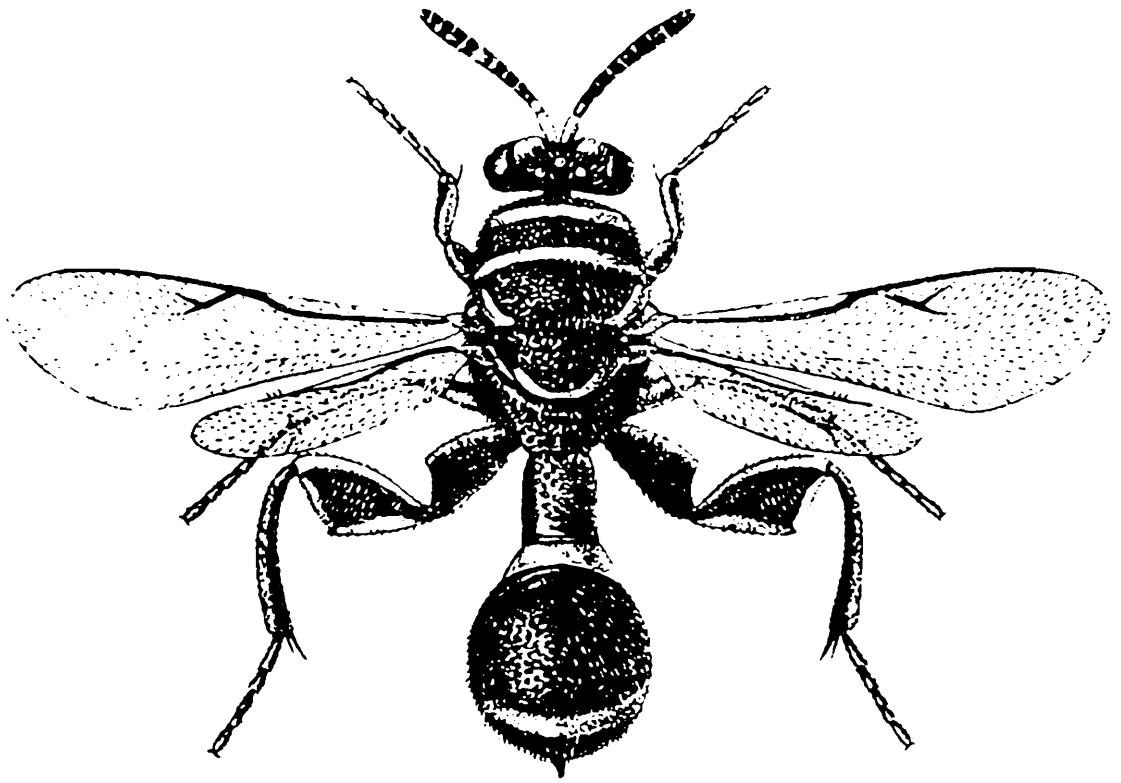

FIG. 52. *Leucospis pyriformis* (Weld), female.

Female : Length 12.00-15.00 mm. Body black; sides of head in front broadly from ocelli to almost lower orbital border, pronotum except basal slope and wide transverse line in the middle, large marking in the middle of mesonotum transverse at base and apex; scutellum except base, black on base projecting as triangular wedge into yellow; a mark longer than wide on side of propodeum, with inner side straight, outer gradually narrowed to the middle, a small conical spot with narrow end below under wings; a large pyriform mark extending from above below at base of metapleura with the wider end below; a broad band on apex of first tergite, 2 broad transverse bands of which the narrower extending to sides and curved; the broader not reaching sides, not so curved and sides more rounded, followed by a large, longer than broad mark, broadly rounded apically and the apical 0.75 of the ventral surface, yellow; legs yellow; greater part of fore coxa, hind coxa except for an irregular mark inside basally above, sides shortly before middle and under side from behind middle and the teeth black; wings hyaline; scape fulvous-red; antennal segments 3-5 and apical segment fulvous. Markings on head, scape, thorax and legs vermilion; hind femora with 10 teeth, first 5 teeth stout, close, obtuse, following 4 longer, acute, curved, well separated; last tooth shortest; pronotum with a smooth broad transverse keel; eyes not converging.

Male : Length 9.00-10.00 mm. Hind femora with only 8 teeth; 3 stout longer basal close ones; a stouter tooth near to these, 2 longer

and acute widely separated; a smaller stumpy tooth; colour and markings as in female.

Type locality : France

Distribution : Europe, N. Africa, Turkey, Iran, Afghanistan, Central and Middle Asia, Pakistan and China.

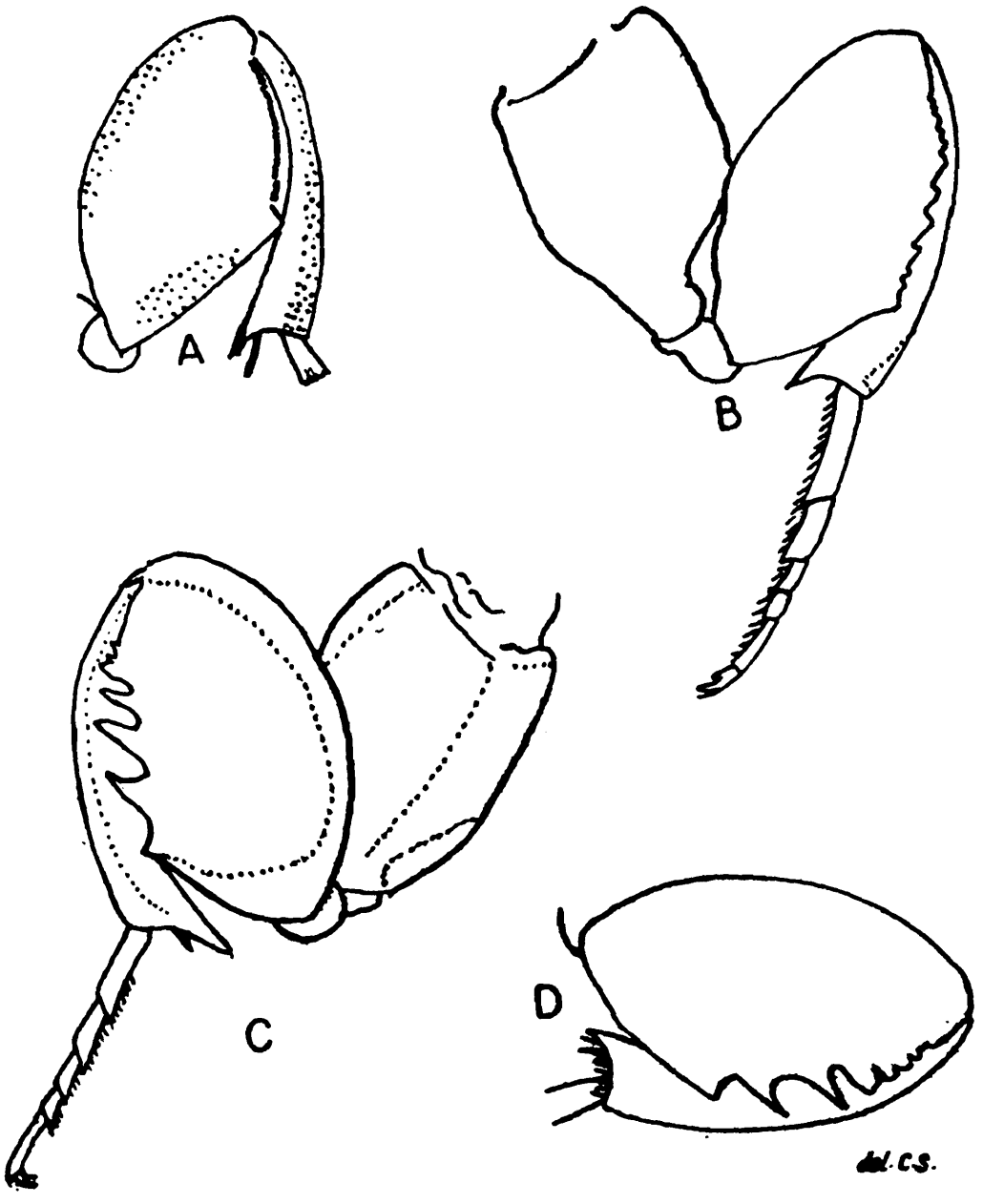

FIG. 53. A. *Leucospis pediculata* Guerin-Meneville, hind leg; B. *Leucospis guzeratensis* Westwood, hind leg; C. *Leucospis darjilingensis* Mani, female, hind leg; D. *Leucospis gigas* Fabricius, female, hind femur and tibia.

Leucospis petiolata Fabricius

(Fig. 53)

1787 *Leucospis petiolata,* Fabricius, *Mant. Ins., Spec.* Copenhagen, 1 : 285.

1798 *Leucospis petiolata,* Fabricius, *Suppl. Ent. Syst.,* Copenhagen, 259.

1860 *Leucospis aneura,* Walker, *J. Ent.*, 1 : 18-19.
1862 *Leucospis semirufa,* Walker, *Trans. ent. Soc. London,* (3) 1 : 346.
1890 *Leucospis anauroptera,* Schletterer, *Berl. Ent. Z.*, 35 : 242-244.
1901 *Leucospis similis,* Enderlein, *Arch. Naturg.* (1) 3 : 217-219.
1911 *Leucospis feminina,* Strand, *Int. Ent. Z.*, 5 : 169-170.
1922 *Leucospis indiensis,* Weld, *Proc. US Nat. Mus.*, 61 (6) : 20-21.
1935 *Leucospis indiensis,* Masi, *Boll. Soc. Ent. Ital.*, 67 (3) : 41.
1936 *Leucospis indiensis,* Mani, *Rec. Indian Mus.*, 38 : 339.
1938 *Leucospis indiensis,* Mani, *Cat. Indian Ins.*, 23 :
1974 *Leucospis petiolata,* Boucek, *Bull. Brit. Mus.* (Ent.) 23 : 174.

Female : Length 10.50 mm. Body black with white markings, polished spot on propodeum; variable species, with markings ranging from white to yellow and reddish abdomen; the following white markings: narrow transverse bands near front and hind margins of pronotum; smooth polished median area of the posterior 0.50 propodeum; a very small triangular spot laterally on second tergite near hind margin; a narrow band near hind margin on sixth tergite; 2 lines on upper side, near middle on last tergite; short narrow stripe near tip above on fore femora and a long outer basal 0.50 of tibiae; small spot at base and tip of middle tibiae; a broad band near basal tooth of hind femora and extending on upper margin to tip; a stripe along outer side of hind tibiae from base to tip.

Head wider than pronotum, densely clothed with silvery-white hairs, finely rugosely punctate; eyes sinuate; gena 0.22-0.30 of eye; vertex broad, closely punctate, polished striate on either side of ocelli; interocular space 1.30 times the ocellar space, occipital carinae distinct in the middle; antennae with 12 segments; scape 2 times as long as thick; first funicular segment 1.50 times pedicel; segments 3, 4 and 5 subequal; pronotum distinctly transversely depressed before premarginal carina; pronotum transversely rugosely punctate, with one faint transverse carina covered by the posterior white band; anterior white band on margin, mesonotum longer than pronotum; scutellum coarsely punctate; propodeum with the polished spot divided by low median carinae; lateral carinae converging behind; hind coxae mostly punctate, polished area from tip along upper margin; hind femora 2 times as long as thick; finely densely punctate, armed with one basal tooth followed by 3 on left femur and 4 on right femur; long widely separated stout teeth; abdomen hairy, equal to rest of body reddish at base, swollen behind the middle, compressed apically; second tergite scarsely longer than wide, with median polished line; tergites 3, 4 and 5 short, subequal; sixth tergite as long as the third, fourth and fifth tergites combined; ovipositor touches the front margin of sixth tergite.

Type locality : India : Coromandel Coast

Distribution : Sri Lanka, Bangladesh, Burma, Thailand, South China, Philippines, Malaysia, Indonesia, New Guinea, Singapore, Queensland; India; E. Himalaya, Madras, Coimbatore, Walayar, Nilgiri, Pondicherry.

Leucospis pyriformis (Weld)

(Fig. 52)

1922 *Epexochlaenoides pyriformis,* Weld, *Proc. US Nat. Mus.,* 61 (6) : 35.
1936 *Epexochlaenoides pyriformis* Mani, *Rec. Indian Mus.,* 38 : 338.
1937 *Epexochlaenoides pyriformis,* Mani, *Rec. Indian Mus.,* 39 : 300.
1938 *Epexochlaenoides pyriformis,* Mani, *Cat. Indian Ins.,* 23 : 49.
1974 *Leucospis pyriformis,* Boucek, *Bull. Brit. Mus.* (Ent.) 23 : 202.

Female Length 8.10 mm. Body black, with yellow spots; tegula, middle and hind coxae, hind femora below, second tergite rufous; the following yellow : scape, transverse band near front and hind margin of pronotum, anterior band wider in the middle and dilated at sides, posterior band disappearing at the sides; short bands laterally on mesonotum above tegulae; crescent-shaped marking on hind margin of scutellum; tip of fore femora; small spot near tip of middle femora, front and middle tibiae; a spot at base of hind coxae above; and a spot below near tip; the apical 0.33 of hind femora above, and a triangular spot below at base; hind tibiae above; tarsi, 2 transverse bands on abdomen.

Head as wide as pronotum, finely rugose; interocellar space 2 times ocellocular space; scape equal to the following segments combined; first funicular segment 1.30 times pedicel; segments 3, 4 and 5 subequal; pronotum closely punctate with 2 transverse carinae parallel to the carinate hind margin; the anterior carina short, obsolete at the sides, posterior carina complete; mesonotum closely rugose; scutellum rounded behind; propodeum with median carina slightly curved; hind coxae without spur, hind femur punctate outside, very minutely toothed; abdomen equal to thorax, with a narrow polished median line from the triangular depression at base to the middle of tergites; ovipositor short, not reaching fifth tergite front margin.

Male Length 5.50 mm. Abdomen elongate, flattened, second tergite rufous, front yellow transverse band on abdomen much farther behind than in female; front ocellus separated from scrobe by 0.50 of its diameter; dorsellum subbidentate but not carinate behind; ocellar space 1.30 times ocellar diameter

Type locality : Pusa (Bihar)

Distribution India : Bombay Dohad, Pusa, South India; Pakistan : Sind.

Host *Xenorhynchium nitidulum* (Fabr.)

Leucospis pediculata Guerin-Meneville

1845 *Leucospis pediculata,* Guerin-Meneville, *Icon. Reg. Animal Ins.,* 7 (1844) : 412-414.
1909 *Leucospis pediculata,* Schmiedeknecht, *Gen. Ins.,* 97 : 16.
1974 *Leucospis pediculata,* Boucek, *Bull. Brit. Mus.* (Ent.) 23 : 201.

Pronotum with premarginal carina sharp, covered by transverse yellow band; hind coxae 1.20 times as long as wide; face with short dense hairs, with longer scattered setae; ovipositor reaching beyond the yellow transverse hand on fifth tergite, which is strongly convex; front ocellus close to scrobe; dorsellum carinate, bidentate behind; ocellocular space about 1.30 times ocellar diameter; hind femora with basal tooth strong and with unusually minute comb-like teeth; body non-metallic, fore tibiae carinate above; hind tibia truncate apically, outer spur distinct; hind coxa without tooth above.

Type locality : (Cuba) Java

Distribution : India, Burma, Malaya, Singapore, Java

Leucospis bombayensis Mani

1935 *Leucospis bombayensis,* Mani, *Rec. Indian Mus.*, 37 : 246.
1937 *Leucospis bombayensis,* Mani, *Rec. Indian Mus.*, 39 : 298.
1938 *Leucospis bombayensis,* Mani, *Cat. Indian Ins.*, 23 : 47.
1974 *Leucospis bombayensis,* Boucek, *Bull, Brit. Mus.* (Ent.) 23 : 182.

Female : Length 5.50 mm. Body black; fore and middle legs, hind coxae and tarsi brownish-red; spots and markings as follows: scape below, except for a short stretch basally; a broad transverse band, curved forward on pronotum, reaching the sides and covering the anterior transverse carina and enlarged at the ends; broad marginal bands laterally on mesonotum; posterior submarginal broad band dilated at the ends on scutellum, straight behind and sinuate in front; a short, longitudinal, subapical band below on the outside on fore femora and fore tibiae in front; hind coxae above at the upper basal angle and another below subapically; hind femora outside except for large triangular very dark reddish area subapically and behind including teeth; hind tibia behind; 2 closely approximated subtriangular spots in front on mid-dorsum of the second tergite, with the base of the triangle anterior; a narrow band on the fifth tergite and another larger fusiform submarginal spot behind on the sixth tergite on either side of the median fovea.

Body moderately setose and coarsely punctate; antennae less than 0.33 of body; segments 12; pedicel subequal to the first funicular segment; funicular segment 2 and 3 subequal; segment 4 a little longer; segment 5 equal to the third; pronotum about 0.66 of scutum, with 2 transverse carinae, and medially subangularly raised parallel to the hind margin; the anterior carina nearly as strong as the slightly longer posterior carina, which does not touch the sides; mesonotum dull, more coarsely punctate than pronotum; hind coxae acute above at base, with sparse serrations above subapically, closely minutely punctate; hind femora coarsely punctate, about 2 times as long as wide, with 7 teeth below, the basal tooth large and obtuse, second tooth minute and blunt, third tooth equal to the basal tooth, stout and acute, teeth 4 and 5 subequal and acute, a little longer than the

third, tooth 6 like the third, seventh tooth large, short 5-denticulate; hind tibia about 0.75 of femur; apically produced into a short, stout, somewhat curved acute process and with a spur equal to the process.

Abdomen about 0.50 of body and about 3 times as long as wide at the sixth tergite, somewhat constricted at the second tergite, which is slightly longer in the middle than the sixth; with deep ovipositor fovea; ovipositor reaching almost to the front margin of the first tergite.

Type locality Satara-Bombay

Distribution Nasik to Satara

Leucospis guzeratensis Westwood

(Fig. 53)

1839 *Leucospis guzeratensis,* Westwood, *Z. Ent.,* 1 : 253.
1922 *Leucospis bengalensis,* Weld, *Proc. US Nat. Mus.,* 61 (6) : 32.
1935 *Leucospis ramakrishnai,* Mani, *Rec. Indian Mus,* 37 : 248.
1936 *Leucospis bengalensis,* Mani, *Rec. Indian Mus.,* 38 : 339.
1936 *Polistomorpha paivai,* Mani, *Rec. Indian Mus.,* 38 : 338.
1936 *Leucospis bengalensis mackenziei,* Mani, *Rec. Indian Mus.,* 38 : 338.
1974 *Leucospis guzeratensis,* Boucek, *Bull. Brit. Mus.* (Ent.) 23 : 182.

Female : Length 10.00 mm. Body black, with the following spots and markings: nearly subtriangular pale yellow spots on mid-dorsum in front of the anterior carina on pronotum; fore and middle legs reddish-brown; 2 short longitudinal, yellowish-white lines apically on hind tibia; a pair of minute reddish-brown spots on either side of the median fovea on tergite 6.

Head as wide as pronotum, closely coarsely punctate, densely pubescent; eyes densely pubescent; malar space about 0.33 of eye; occipital carina prominent between the lateral ocelli; flagellar segments 2-5 longer than thick; thorax dull; pronotum umbilicately punctate, with 2 carinae parallel to the posterior margin and subangularly raised; lateral margin carinate; mesonotum more coarsely and densely punctate than pronotum; scutellum and propodeum umbilicately punctate, without median longitudinal keel; hind femora with 7 teeth; basal tooth short, broad, followed by 4 teeth, which become gradually smaller; tooth 6 large and after a gap the seventh tooth compound tetradenticulate; hind tibia apically spinous, outer spur rudimentary; abdomen equal to the rest of body; first tergite steeply raised; furrow narrowed in front; ovipositor reaching to middle of first tergite.

Male : Length 6.50 mm. Body black; hind coxa except at tip and rest of all legs very dark reddish-brown; the following yellow spots and markings: scape below, a transverse band on the anterior carina on pronotum; front knee; middle tibiae beneath; hind coxae

above at base; hind femora outside at base and continued to the basal 0.50 above; apical 0.75 of hind tibia above; abdomen with 2 transverse bands dorsally, the anterior short and the posterior long but broken in the middle and wider at the sides.

Head coarsely densely punctate; eyes pubescent; thorax closely umbilicately punctate; anterior carina on pronotum not reaching ends of the transverse yellow bands; posterior pronotal carina somewhat longer but also not reaching the sides; hind margin carinate in the middle but not at the sides; propodeum with median and lateral carinae; hind coxa densely but finely punctate; hind femora umbilicately punctate, with 8 teeth; first tooth large, acute; second tooth small; third tooth somewhat longer; teeth 4-6 much larger; tooth 7 somewhat smaller; tooth 8 compound and tridenticulate; abdomen deeply umbilicately punctate.

Type locality : India : Gujerat

Distribution : Pakistan, Burma, India : Bombay, Hyderabad, Walayar, Coimbatore, Nilgiri, Sikkim.

FAMILY CHALCIDIDAE

1835 *Chalcididae,* Walker, *Ent. Month. Mag.,* 2 : 20.
1839 *Chalcididae,* Haliday, *Hym. Synop.,* 2.
1856 *Chalcididae,* Förster, *Hym. Stud.,* 2 : 29.
1884 *Chalcididae,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 53-78.
1897 *Chalcididae,* Ashmead, *Proc. ent. Soc. Washington.* 4 : 247.
1904 *Chalcididae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 247.
1909 *Chalcidinae,* Schmiedeknecht, *Gen. Ins.,* 97 : 17.
1915 *Chalcididae,* Girault, *Mem. Queensland Mus.,* 4 : 314.
1929 *Chalcididae,* Masi, *Boll. Lab. Ent. Bologna,* 2 : 145-188.
1938 *Chalcididae,* Mani, *Cat. Indian Ins.,* 23 : 49.
1979 *Chalcididae,* Krombein *et al.,* Hymen. N. America, 1 : 860.

Fore femur strongly swollen, almost always either dentate or serrate below; fore wing never folded longitudinally; pronotum short; abdomen mostly conical or rounded, often petiolate.

KEY TO SUBFAMILIES

1.	Abdomen sessile or nearly so	2
	Abdomen distinctly petiolate	3
2.	Antennae inserted below the level of lower orbital borders, usually close to clypeus especially in female; hind tibiae truncate apically, not produced into spine	*Haltichellinae*
	Antennae inserted above the level of lower orbital borders, far above the clypeus in both sexes; hind tibiae obliquely emarginate and apically produced spinously	*Brachymerinae*

3. Head normal, not produced forward into horns — 4

Head produced forward into horns; petiole of abdomen carinate — *Dirhininae*

4. Antennae inserted below the level of lower orbital borders, often close to mouth; petiole of abdomen carinate, anteriorly not laminated — *Epitraninae*

Antennae inserted above the level of lower orbital borders, in the middle of face, at least not close to the mouth; abdominal petiole not carinate, not laminate in front — *Chalcidinae*

SUBFAMILY HALTICHELLINAE

1904 *Halticelline,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 248.
1909 *Halticellini,* Schmiedeknecht, *Gen. Ins.,* 97 : 49.
1938 *Haltichellariae,* Mani, *Cat. Indian Ins.,* 23 : 59.

This subfamily is closely related to Chalcididinae and is separated by the difference in the insertion of the antennae. This character is, however, not very reliable and is often difficult to decide; antennae inserted usually below level of lower orbital border, scape long; head without horns in front; hind femora pectinate, with small close teeth; hind tibiae truncate apically, spurs double, with 3 carinae one ventro-outer, a second ventro-inner and third ventral; abdomen with very short petiole; fore wing with vein *pm* usually absent, sometimes well developed and long.

KEY TO TRIBES

1. Fore wings with vein *m* adjoining front margin; vein *pm* and *st* usually well developed — *Haltichellini*

Fore wings with vein *m* not adjoining front margin but lying a little behind; veins *pm* absent; vein *st* very short — *Hybothoracini*

Tribe HALTICHELLINI

1951 *Haltichellini,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (1) : 36.

Fore wing with vein *m* adjoining the front margin; vein *pm* generally more or less well developed; hind femora with the ventral lobes and teeth projecting outside of hind tibiae.

KEY TO GENERA

1. Scutellum produced behind into a short spine — 2

Scutellum produced behind into lobate or spined teeth; fore wing with vein *st* without a beaked rudiment — 3

2. Antennae inserted close to the mouth; fore wings spotted — *Trichoxenia* Kirby

   Antennae inserted high on frons, very short; fore wing with vein *st* with long, beaked rudiment obliquely to the front margin; abdomen in female short, ovate; ovipositor short — *Belaspidia* Masi

3. Frons with a distinct pre-orbital carina along the orbital margin, extending inward dorsally on frons and uniting with its fellow of the opposite sides above and behind the front ocellus; antennae inserted very close to clypeus; fore wing with vein *pm* longer than *st* — *Antrocephalus* Kirby

   Frons without pre-orbital carina, at the most only a slight keel, which disappears above — 4

4. Scutellum produced behind or with a flat bilobed teeth — 5

   Scutellum transverse apically; propodeum areolate basally and toothed postero-laterally — *Megachalcis* Cameron

5. Scutellum produced behind into 2 parallel, horizontal acute teeth — 6

   Scutellum with only 2 flat lobate short teeth; if, however, with longer teeth, then abdomen clothed with dense white hairs — 7

6. First tergite large, tongue-shaped, broadly rounded behind; basally with a pair of carinate keels and finely longitudinally striate in between the keels; fore wing with vein *pm* often indistinct; pre-orbital carina disappearing below the front ocellus — *Haltichella* Spinola

   First tergite short; fore wing with vein *pm* distinct, subequal to *m;* pre-orbital carina not extending above scrobe — *Eugastrochalcis* Masi

7. Abdomen in female elongate-conical or shortly pointed behind; epipygium with a median longitudinal carina; if with short abdomen, then wings with 2 distinct dark spots — 8

   Abdomen in male short, rounded behind; epipygium without median carina; pedicel shorter than first funicular segment, annellus usually present — 11

8. Antennae long, slender, inserted close to the clypeus; pedicel at least 3 times as long as thick; scape reaching front ocellus; if antennae short, then wings with 2 spots — 9

   Antennae short, inserted high in the middle of face; if however inserted below, then wings uniformly darkened — 10

9. Face strongly excavate; antenna very long; hind femora coarsely punctate, shiny; thorax often more or less red — *Euchalcis* Dufour (female)

   Face not deeply excavate; antennae generally short; abdomen without dense hairs; hind femora with a fine sculpture, dull, body generally black — *Hockeria* Walker (female)

10. Frons not bulging convexly in front; head transverse; antennae inserted below middle of face; scape long; scutellar teeth distinct. *Neochalcis* Kirby

11. Antennae filiform, with distinct annellus; labrum with an indistinct median carina. *Neochalcis* Kirby (Male)

Antennae without an annellus; labrum without trace of carina 12

12. Hind femora shiny, coarsely punctate, with a small tooth beneath in the middle; antennae reduced apically; first funicular segment long, stout, bent *Euchalcis* Dufour (male)

Hind femora finely sculptured, not shiny, tooth not acute; scutellum behind with short lobed teeth; antennae often filiform; fore wings uniformly smoky, with indications of 2 spots; abdomen without conspicuous hairs *Hockeria* Walker (male)

Trichoxenia Kirby

1883 *Trichoxenia,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 62.
1904 *Trichoxenia,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 255, 257.
1909 *Trichoxenia,* Schmiedeknecht, *Gen. Ins.,* 97 : 60.

Antennae inserted close to the mouth, long, slender, with 12 segments; scape about 0.25 of antennae; second and third segments minute, the remaining funicular segments much longer than thick and gradually becoming shorter apically, the last one very minute; scrobe deep, reaching front ocellus; thorax with coarse sculpture; parapsidal furrows indistinct; scutellum behind with a short, straight spine; propodeum behind with short lateral spines; wings spotted; hind femora without teeth, but with only rounded knob-like projection near the base, beyond which shallowly longitudinally excavate for receiving the tibia; abdomen very convex, short, sessile, first tergite occupying 0.50 of the dorsum; ovipositor short and stout.

Type-species *Trichoxenia cineraria* (Walker)

Trichoxenia zigonensis Mani & Dubey

(Fig. 54)

1973 *Trichoxenia zigonensis,* Mani & Dubey, *Mem. School Ent.,* 2 : 35.

Female : Length 5.50 mm. Body black; eyes brown; wings subhyaline, transversely banded brown; veins dark brown.

Head viewed from above length to width 39 : 100; head width to thorax width 100 : 75; ocelli almost in a straight line; lateral ocelli a little behind carinate vertex; front ocellus in upper margin; ocellocular space equal to 2 ocellar diameters, interocellar space 2.25 times ocellocular space; front ocellar space subequal to ocellocular space; vertex thin, narrow forming an acute, smooth ridge, with fine

* This species may right by belong to *Hockeria.*

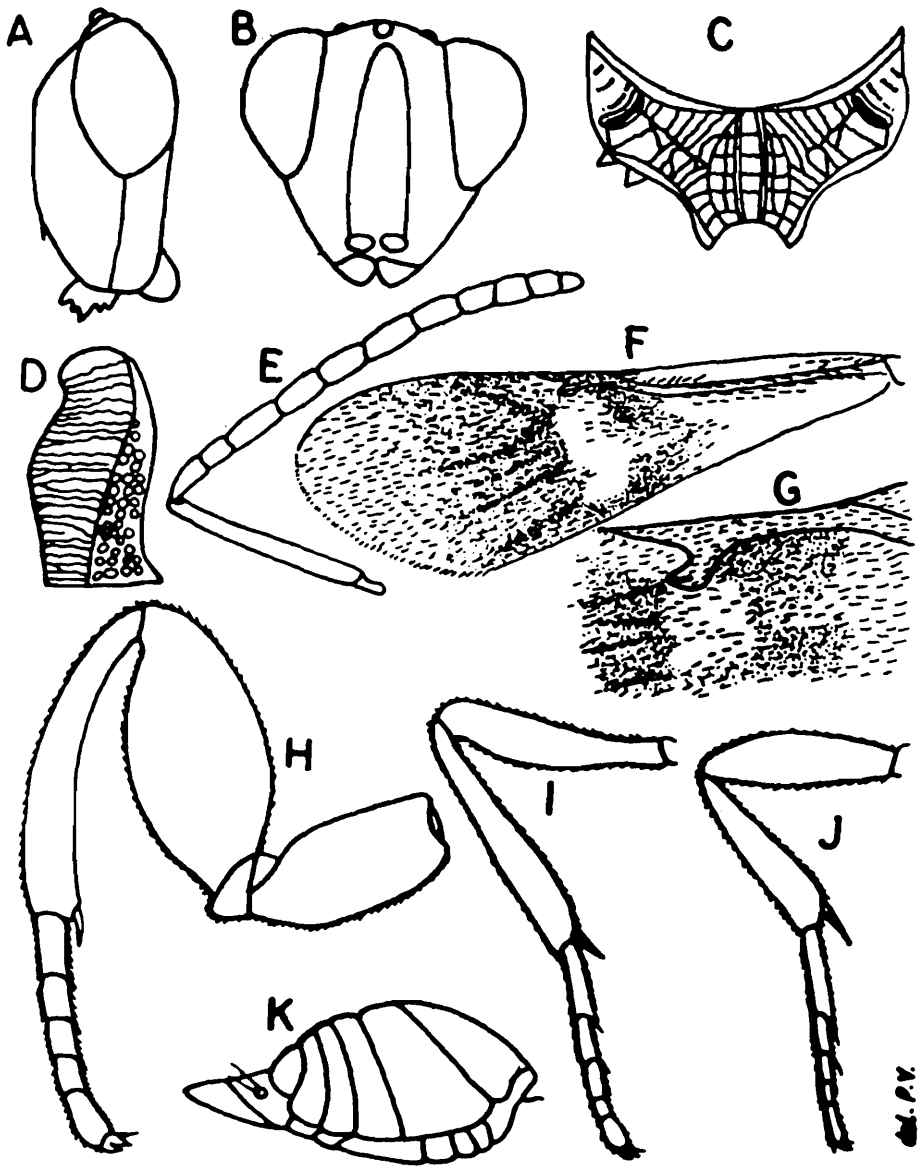

FIG. 54. *Trichoxenia zigonensis* Mani & Dubey, female : A. Head profile view; B. Head in front; C. Propodeum; D. Mesopleura; E. Antenna; F.Fore wing; G. Stigmal area; H. Hind leg; I. Middle leg; J. Fore leg; K. Abdomen.

microsculpture; head viewed in front height to width 75 : 100; face contiguously, rugosely, deeply punctate; scrobe well impressed, with front ocellus lying just within it and with fine reticulate microsculpture, below with a well developed median carina which disappears about the middle; head viewed from side length to width 100 : 55; gena subequal to eye; antennae inserted very close to the mouth, slender, segments 12 : 1.1.1.6.3; annellus elongate; scape 0.33 of antenna, about 10 times as long as thick; pedicel about 0.25

of scape; annellus about 0.70 of pedicel; first funicular segment longest, 2 times the annellus; second segment about 0.80 of the first; third, fourth and fifth segments subequal; sixth 0.80 of the fifth; club not much thicker than funicle, equal to the preceding 2 segments combined, basal 2 segments subequal, terminal segment slightly shorter

Pronotum transverse, about 4 times as wide as long, with large, deep, contiguous punctae; parapsidal furrows complete; punctae on mesonotum smaller, shallower, and closer than on pronotum; scutellum with punctation as on pronotum, bidentate at apex, teeth widely separated; fore wing length : width 100 : 33; veins *sm : m : pm* ratio 520 : 100 : 85; vein *st* very short, stigma subsessile; fore femur moderately stout; tibia subequal to femur, stouter apically; tarsus 1.15 times tibia; metatarsus about 0.40 of tarsus; second segment 0.40 of metatarsus; third and fourth subequal; fifth 1.80 times the preceding; middle femur clavate; tibia 1.17 times femur; tarsus 0.80 of tibia; metatarsus 0.33 of tarsus; second segment 0.70 of metatarsus; third 0.70 of the second; fourth 0.70 of the third; fifth subequal to third; hind leg clothed with very minute hairs, punctae small, contiguous; coxa 2 times as long as thick; femur 1.50 times coxa, 2 times as long as thick, below finely pectinate; tibia stouter apically, slightly longer than femur; tarsus a little over 0.75 of tibia; metatarsus 0.25 of tarsus; second 0.80 of metatarsus; third 0.70 of the second; fourth subequal to third; fifth 1.60 times the preceding.

Abdomen 0.50 of body; first tergite about 0.50 of abdomen, smooth except for obscure, close microsculpture in the posterior 0.25; second tergite 0.50 of the first, with close microsculpture in apical 0.66; remaining tergites with reticulate microsculpture; tip conspicuously produced and laterally compressed.

Type locality : Burma

Distribution : Burma

Host : Hapalia machaeralis defoliating *Tectona grandis*

Antrocephalus Kirby

1871 *Halticella* (partim), Walker, *Notes Chalcids,* 43.
1883 *Antrocephalus,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 54, 63.
1904 *Antrocephalus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 255, 256.
1909 *Antrocephalus,* Schmiedeknecht, *Gen. Ins.,* 97 : 58.
1929 *Tainania,* Masi, *Boll. Lab. Ent. Bologna,* 2 : 159.
1929 *Sabatiella,* Masi, *Boll. Lab. Ent. Bologna,* 2 : 167.
1938 *Antrocephalus,* Mani, *Cat. Indian Ins.,* 23 : 62.
1946 *Dillisca,* Ghesquiere, *Rev. zool.-bot. Afr.,* 39 : 367.
1951 *Antrocephalus,* Boucek, *Acta ent. Mus. Nat. Pragae,* 27 (1) : 53.
1960 *Antrocephalus,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan* (C) 11 : 251.
1977 *Tainania,* Narendran, *Entomophaga,* 22 (3) : 295.
1979 *Antrocephalus,* Krombein *et al.,* Hymen. N. America, 1 : 860.

Head with the front ocellus inserted almost vertically; scrobe distinctly deep; eyes usually glabrous; pre-orbital carinae distinct, not interrupted dorsally, but continued transversely above front ocellus; on each side of antennal socket one carina present; antennal sockets directly above frontoclypeal suture in female and generally remote in male; frons viewed from side usually concave above antennal sockets; clypeus turned down in female fully; antennae slender, longer in male than in female; scape longer in female than in male; pronotum with more or less well developed anterior carinae and sometimes paired tubercles in the middle; scutellum weakly or distinctly bilobed behind, with or without a median longitudinal furrow; propodeal lateral projections not acute, but blunt or also obscure; fore wings usually more or less infumate; vein *pm* as long as or also longer than *m*; vein *st* short; hind coxae with or without tubercle above basally; hind femora not strongly punctate; outer lower margin without acute triangular projection; abdomen in female more or less pointed behind; first tergite often with pair of short median parallel carinae basally; ovipositor well exserted.

Type-species : Antrocephalus fascicornis (Walker)

KEY TO SPECIES

1. Large sized species, exceeding 5.00 mm and often reaching 7.00 mm	2
Medium or small sized species	3
2. Female 7.50 mm long; veins *m* and *pm* subequal	*Antrocephalus galleriae* Subba Rao
Female 5.00-6.00 mm long; vein *pm* longer than *m*	*Antrocephalus renalis* Waterston
3. Hind femora without tubercle and without minute teeth below; scutellum without a median longitudinal sulcus	*Antrocephalus phaeospilus* Waterston
Hind femora with tubercle and teeth	4
4. Scutellum with a median longitudinal sulcus.	*Antrocephalus humilis* Waterson
Scutellum without median longitudinal sulcus	5
5. Veins *m* and *pm* subequal; first funicular segment short like an annellus	*Antrocephalus destructor* Waterston
Veins *m* and *pm* unequal	6
6. First funicular segment longest; vein *pm* longer than *m*	*Antrocephalus carinifrons* (Cameron)
First funicular segment not the longest	7
7. Scutellum at least 1.50 times as long as wide, minutely bidentate; pedicel elongate; vein *pm* shorter than *m*	*Antrocephalus nepalensis* (Mani & Dubey)
Scutellum less than 1.20 times as long as wide	*Antrocephalus dividens* (Walker)

Antrocephalus galleriae Subba Rao

1955 *Antrocephalus galleriae,* Subba Rao, *J. Nat. Hist. Soc.,* 52 : 948.

Female Length 7.50 mm. Body black; vertex with white pubescence; antenna dark brown; club castaneous; fore legs dark brown; hind coxae black; femora externally blackish, castaneous round the edges; hind tibia castaneous distally; tarsi castaneous; fore wings hyaline; abdomen shining black.

Head in front view triangular; a little longer than wide; scrobes wide, deep, extending to the orbits, with a strong carina extending down to malar keel; vertex rugose; front ocellus within the scrobe; lateral ocelli slightly away from the orbits; scape elongate, slender; pedicel slender, a little over 0.20 of the scape; funicle with 8 cylindrical segments; segments 2-6 thicker than the preceding; segments 7 and 8 narrower than 6; club longer than funicular segments, sutures obscure.

Thorax closely umbilicately punctate, between the punctae minutely rugose; pronotum anteriorly margined; anteromedianly descending down vertically; scutellum with 2 distinct teeth on hind margin and longitudinal median depression; mesopleural impression with 10 complete and 2 incomplete ridges; propodeum rugose, with silvery-white hairs at the sides; fore wings not quite 3 times as long as wide; veins *sm, m* and *pm* ratio 7 : 2 : 2; hind wing about 3.40 times as long as wide; a brownish spot from vein *m* to *st,* its width more than 2 times *st*; hind femora with 2 inner lobes and dentate below, teeth about 54; tibiae with 2 short spurs.

Abdomen devoid of pubescence on the dorsum, with rows of long silvery-white hairs at the sides.

Type locality Madhuban Orchards, Thanedar : Simla Hills

Distribution Simla Hills

Host Bred from bee-hive

This species is very near to *A. renalis* Waterst., but differs from the latter in the following: Wings hyaline; tarsi and club castaneous; veins *m* and *pm* equal, brownish spot more than 2 times broader than *st.* Of all the species of *Antrocephalus* recorded from India *A. galleriae* is the longest (7.50 mm). *A. renalis* comes next, with length 6.00 mm.

*Antrocephalus renalis** Waterston

(Fig. 55)

1920 *Stomatoceras sulcatiscutellum,* Girault (MS. name) in Ramakrishna Ayyar, *Rep. Proc. Third Ent. Meet. Pusa,* 3 : 934.

1929 *Antrocephalus renalis,* Waterston, *Indian forest Rec.,* 9 : 69.

1938 *Antrocephalus renalis,* Mani, *Cat. Indian Ins.,* 23 : 63.

1938 *Stomatoceras sulcatiscutellum,* Mani, *Cat. Indian Ins.,* 23 : 64.

1976 *Antrocephalus renalis,* Narendran, *Entomon,* 1 (2) : 187.

* Some authors use *sulcatiscutellum* Gir. for *renalis* Waters., but that is *nom. nudum.*

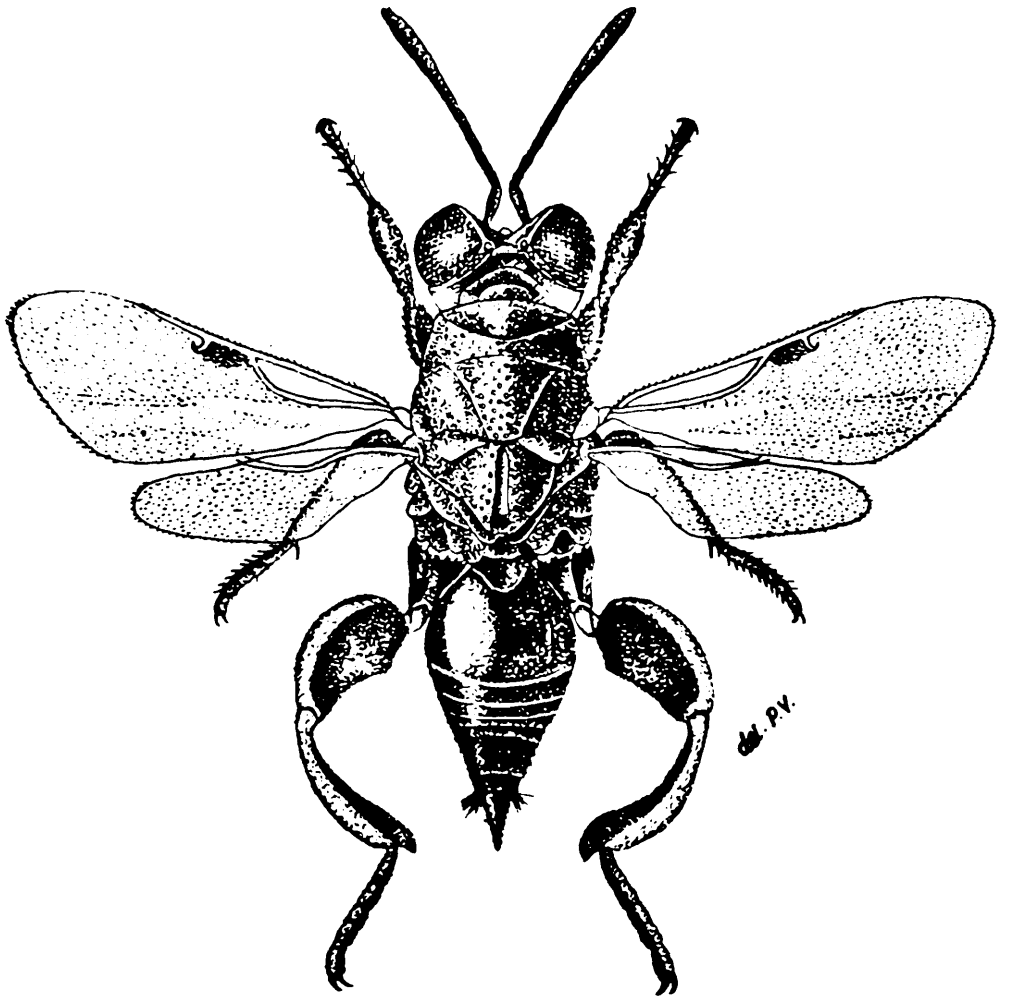

FIG. 55. *Antrocephalus renalis* Waterston, female.

Female : Length 5.00-6.00 mm. Body black; antennae reddish-black; last 2 funicular segments, margins of tegulae blackish-brown; wings slightly infumate, with a blackish-brown spot extending from the base of vein *m* to *st* and a little broader than vein *st;* tarsi blackish-brown; scutellum with a median longitudinal crenulate sulcus, with contiguous umbilicate punctae, punctation elsewhere on scutellum distinctly separated; the scutellar sulcus behind divided into 2 rounded lobes; fore wing with vein *pm* distinctly longer than *m,* from which a transverse spot extends behind; hind femora with 2 well developed lobes and a basal tubercle.

Head a little wider than thorax; front ocellar space about 0.50 of interocellar space; scape equal to segments 2-6 combined, reaching front ocellus; pedicel equal to first funicular segment; annellus as long as wide; first funicular segment 1.66 times as long as thick; abdomen longer than rest of body; first tergite smooth, shiny, carinae as long as the median fovea; second tergite with setigerous punctae; sixth tergite rugulose.

Type locality Dehra Dun

Distribution : India, Sri Lanka

Hosts Hypsipyla robusta, defoliating *Cedrella toona, Nephantis serinopa* M.

Antrocephalus phaeospilus Waterston

1922 *Antrocephalus phaeospilus,* Waterston, *Indian forest Rec.,* 9 : 72.
1938 *Antrocephalus phaeospilus,* Mani, *Cat. Indian Ins.,* 23 : 63.

Female Length 5.00 mm. Body shiny black; tegulae and legs, except fore coxa brown; fore wing hyaline with a pale brown spot extending from vein *m* backward to 0.25 of wing breadth; antennae dark brown; pedicel and first 2 funicular segments brown; scutellum without median longitudinal sulcus, apically slightly bilobed; thorax umbilicately punctate; punctae separated by their own diameter; hind femora without tooth or tubercle.

Type locality : Kumaon Himalaya : Bhim Tal

Antrocephalus humilis Waterston

1922 *Antrocephalus humilis,* Waterston, *Indian forest Rec.,* 9 : 72.
1938 *Antrocephalus humilis,* Mani, *Cat. Indian Ins.,* 23 : 63.

Female Length 4.20 mm. Body black; tegulae and legs brown; wings hyaline with a brown spot from vein *m* to 0.25 of the wing breadth behind; antennae dark brown; first 2 funicular segments, the third and club pale brown; scutellum longitudinally sulcate; hind femora with a stout tubercle near base.

Type locality Dehra Dun

Distribution Dehra Dun

Antrocephalus destructor Waterston

(Fig. 56)

1922 *Antrocephalus destructor,* Waterston, *Indian forest Rec.,* 9 : 64.
1938 *Antrocephalus destructor,* Mani, *Cat. Indian Ins.,* 23 : 62.

Female Length 5.00 mm. Body black; abdomen below obscure rufous; fore legs brown; hind coxa blackish-brown; femora black outside, brown near the edges; hind tibia brown; darker below; hind tarsi infuscate; fore wing with 2 large spots.

Head viewed from side with the genal carina branching posteriorly and parallel to orbit; facial impression wide, extending to orbit, with a carina extending down to fade-off; punctae moderate, finer than on thorax; scape elongate, slender, 8 times as long as thick

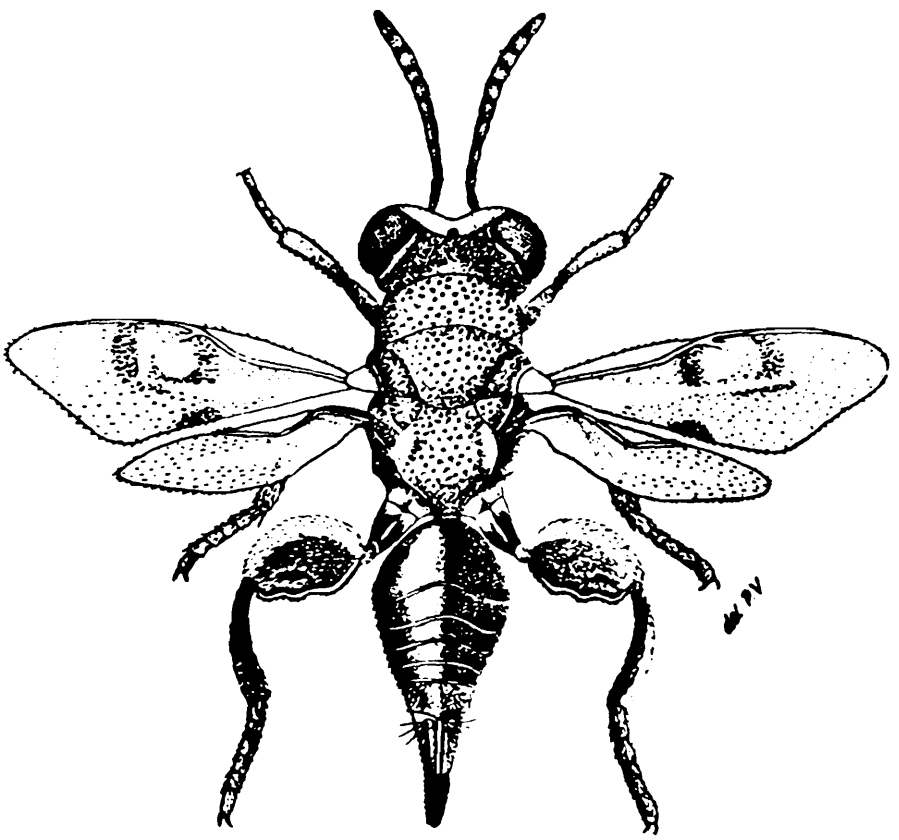

FIG. 56. *Antrocephalus destructor* Waterston, female.

at base; pedicel a little over 0.25 of scape; funicular segments cylindrical; first funicular segment short like an annellus, only little longer than thick; club equal to sixth funicular segment, with only one distinct suture; right mandible tridentate; left bidentate; maxillary palpal segments ratio 7 : 11 : 10 : 16; labial palpal ratio 11 : 4 : 11.

Thorax densely umbilicately punctate; smooth near the parapsides; space between punctae minutely reticulate; pronotum margined antero-laterally; scutellum a little longer than scutum with 2 small teeth apically, but without median sulcus; mesopleura with 10-11 complete transverse ridges and 2-3 incomplete ridges; fore wing almost 3 times as long as wide; veins *sm : m : pm* ratio 9 : 2 : 2; stigma sessile; fore tibia in front and above with short setae; middle tibia in front with 16 spines; hind coxa oblong with 2 blunt teeth above; hind femora without inner tooth or projection, but with 3 lobes and with 48 denticulate teeth from tip to basal 0.33; hind tibia with 2 short spines in front; hind tarsal segments ratio 11 : 12 : 10 : 9 : 12; first tergite finely punctate in apical 0.33; second tergite completely punctate; tergite 3-5 only rough apically; tergite 6 distinctly punctate; tergite 7 carinate in the middle.

Male Wings completely hyaline, except for a slight brownish near vein *m;* abdomen dull; first tergite closely finely punctate, other tergites with 2-3 rows of punctae.

Type locality *Dehra Dun*

Distribution : India

Host *Hypsipyla robusta* attacking on *Cedrela toona* Roxb.

Antrocephalus carinifrons (Cameron)

(Fig. 57)

1904 *Coelochalcis carinifrons,* Cameron, *Entomologist,* 27 : 110.
1938 *Coelochalcis carinifrons,* Mani, *Cat. Indian Ins.,* 23 : 65.
1974 *Sabatiella naduganiensis,* Mani & Dubey, *Mem. School Ent.,* 3 : 21.

Male Length 3.75 mm. Body black; head black except for the dark brown mouthparts; eyes dark reddish-brown; antennae black except for the dark brown scape and pedicel; tegulae blackish-brown; fore and middle legs black except for the femoral tips; tips of tibia and tarsus ferruginous-brown; hind legs almost black except for the ferruginous-brown trochanter, apical 0.25 of tibia and tarsus; wings hyaline.

Head viewed from above width to length in the ratio of 100 : 35, as wide as thorax; ocellocular space equal to ocellar diameter; interocellar space equal to 3 ocellar diameters; pre-orbital carina prominent and encircling front ocellus; front ocellar space about 1.50 times the ocellar diameter; vertex narrow, acute, very sharply sloping behind the occiput, with close punctae behind; occiput with large close umbilicate punctae; head viewed from the front elongate-triangular, length to width in the ratio of 100 : 93; scrobe wide, deep, with obscure transverse striolations; face with close umbilicate punctae; genal carina absent; antennae inserted below lower orbital border, long, slender, with 11 segments: 1.1.1.7.1; distinctly reduced apically; scape attenuated apically, about 5 times as long as thick; pedicel subglobose; first funicular segment longest, about 0.80 of the scape and about 3 times as long as thick; second funicular segment about 0.83 of the first; third nearly 0.90 of the second; segments 4 and 5 subequal; 6 and 7 subequal; club solid, slightly shorter than the 2 preceding segments combined and almost 3 times as long as thick.

Pronotal collar conspicuous, interrupted in the middle, bituberculate, the tubercles as high as thick, pronotum about 3.50 times as wide as long, deeply contiguously punctate; parapsidal furrows complete, anterior 0.50 of mesonotum punctate like pronotum, the posterior 0.50 with large, shallow umbilicate punctae; scutellum equal to mesonotum; sculpture as on scutellum; without teeth; propodeum rugose, areola as long as wide; mesopleural

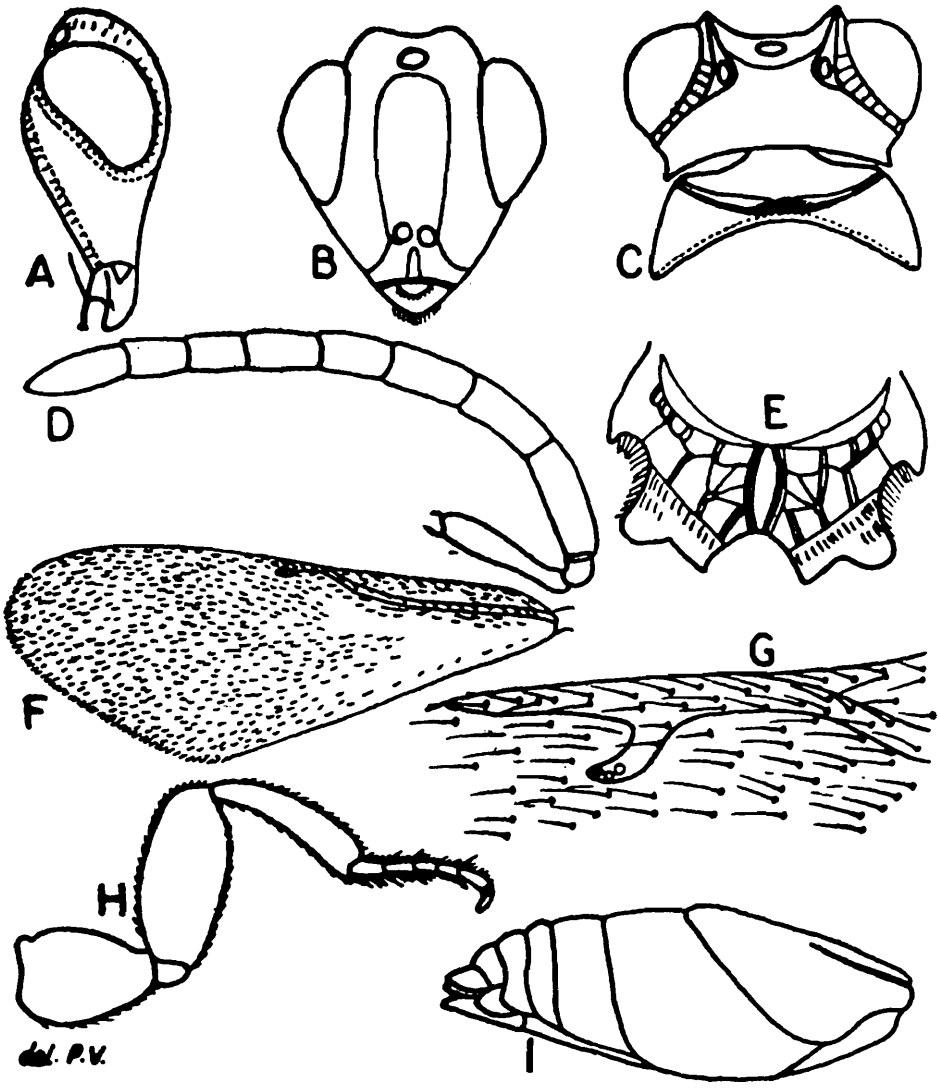

FIG. 57. *Antrocephalus carinifrons* Cameron, male: A. Head in profile view; B. Head in front view; C. Head and pronotum dorsal view; D. Antenna; E. Propodeum; F. Fore wing; G. Fore wing venation; H. Hind leg; I. Abdomen in lateral view.

impression transversely striate; fore wings length to width 100 : 37; veins *sm : m : pm* ratio 528 : 100 : 128; stigma subsessile; hind coxae about 1.55 times as long as thick; femora about 1.35 times coxa, shiny, pubescent, slightly more than 2 times as long as wide, with fine serrations in apical 0.33 below; hind tibia distinctly thickened apically, about 0.84 of femora; tibial spur about 0.33 of metatarsus; metatarsus about 0.23 of tarsus.

Abdomen about 0.45 of body, elongate; first tergite about 0.50 of dorsum, smooth, shiny basally, with a pair of keeled carinae extending nearly to 0.40 of the tergite; tergites 2-5 smooth except for minute punctae in the middle.

Type locality : Sikkim
Distribution : Sikkim; Nilgiri

Antrocephalus nepalensis (Mani & Dubey)

(Fig. 58)

1974 *Sabatiella nepalensis,* Mani & Dubey, *Mem. School Ent.,* 3 : 19.

Female Length 4.75 mm. Body black, head black; antenna, except the dark brown apical 0.50 of scape and pedicel, black; eyes dark reddish-brown, ocelli greyish-brown; wings hyaline, veins brown, all legs except the black fore coxa, ferruginous-red; abdomen black.

Head viewed from above width: length 100 : 30, slightly wider than thorax, with prominent pre-orbital carina encircling front ocellus; ocellocular space about 0.50 of ocellar diameter; front ocellar space equal to the ocellar diameter; vertex narrowed, subacute, abruptly sloping behind to occiput; occiput closely umbilicately punctate; viewed in front subtrapezoid, closely shallowly umbilicately punctate; scrobe wide, deep and with obscure transverse striolations in the middle; clypeal projection covering labrum and mandible; viewed from side height to thickness 100 : 64, gena to eye 75 : 100, closely umbilicately punctate, genal carina absent; antenna inserted close to mouth border, long, slender, about 2.40 times height of head; segments 11: 1 1 1 7.1; scape slender, moderately thickened basally, 7 times as long as thick, about 0.30 of antenna; pedicel elongate, cylindrical, distinctly thicker apically, 0.27 of scape; annellus 0.54 of pedicel; funicular segments 1-2 equal, 3-4 subequal, 5-7 subequal; club solid, nearly 2.40 times the preceding segment and nearly 2.40 times as long as thick, with 2 spurious markings but without any suture.

Pronotal collar interrupted in the middle, bituberculate, the tubercles small; pronotum about 0.33 of thorax, 2 times as wide as long, coarsely umbilicately punctate; mesonotum with umbilicate punctae, separated by their own diameters; parapsidal furrows complete; scutellum 0.75 of mesonotum, punctae as on mesonotum, 1.50 time as long as wide, minutely bidentate; propodeum with tuberculate lateral teeth, median carina well developed, mesopleura with moderately transverse striolations; fore wing length : width 100 36; veins *sm m pm* ratio 405 : 100 : 92; *st* sessile, hind to fore wing 80 : 100; hind coxa 1.60 times as long as thick; hind femora with fine denticulation below apical 0.50; tibia 4 times as long as thick; apical thickness 2.50 times the basal, spur 0.20 of metatarsus; tarsus 0.90 of tibia, metatarsus 0.21 of tarsus, segment 2 subequal to metatarsus, 3 slightly shorter than 2, fourth 0.70 of the third, fifth equal to preceding 2 segments combined.

Abdomen about 0.75 of body, elongate, first tergite covers almost 0.33 of abdomen; viewed from side, length to width 100 : 45, second tergite large, reaching approximately to the middle, all tergites except the first with setigerous punctae along posterior margin.

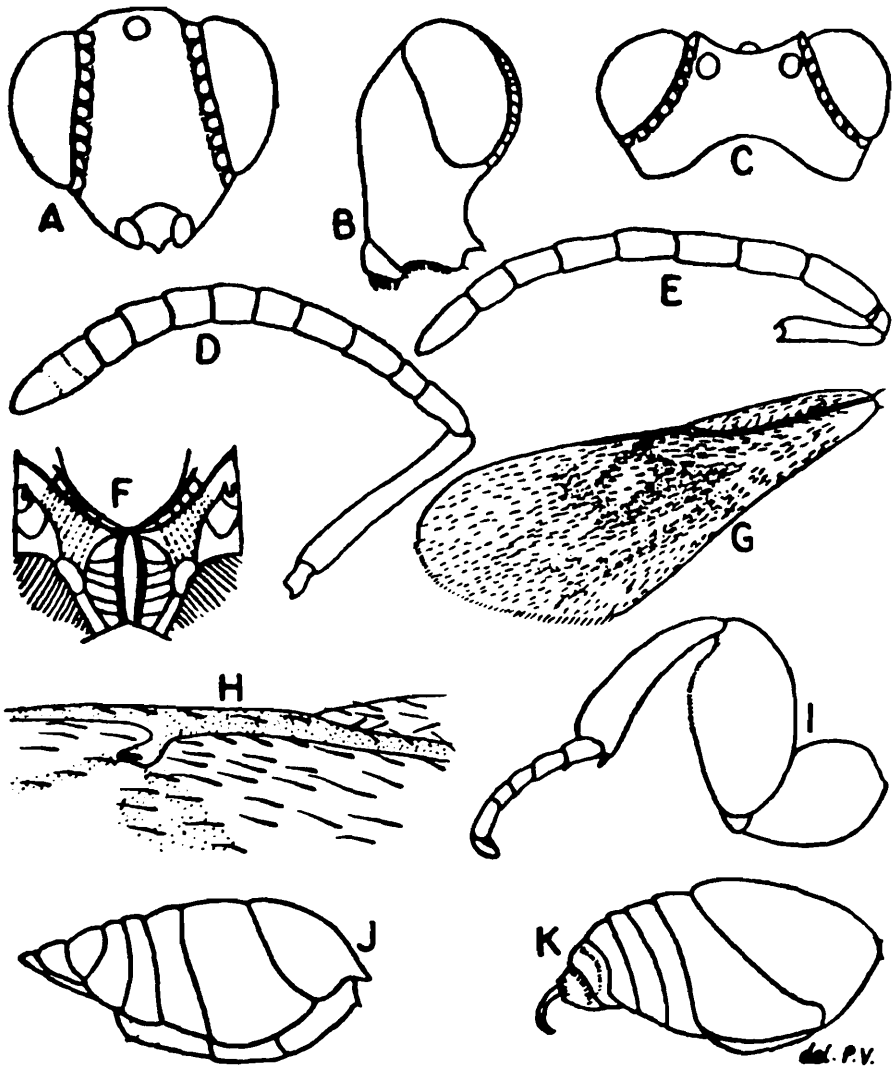

FIG. 58. *Antrocephalus nepalensis* (Mani & Dubey); A. Head in front view, female; B. Head in profile view, female; C. Head in dorsal view, female; D. Antenna, female; E. Antenna, male; F. Propodeum, female; G. Fore wing, female; H. Venation, female; I. Hind leg, female; J. Abdomen in lateral view, female; K. Abdomen in lateral view, male.

Male Length 4.75 mm. Body black, eyes and ocelli black; antenna, except scape and pedicel, black; flagellum dull black; tegula, fore and middle legs dark brown, hind leg ferruginous-red.

Head viewed from above length : width 32 : 100; viewed from front length to width 90 : 100, scrobe wide, deep, with carinate margin; viewed from side gena to eye length 75 : 100, genal carina absent; antenna slightly thinner apically, segments 11 : 1.1 1 7 1; scape slender, moderately thickened basally, about 5 times as long as thick; pedicel subquadrate; annellus 0.20 of pedicel; first funicular

segment longest, about 0.80 of scape and 4 times as long as pedicel; second nearly 0.75 of first, segments 2-5 subequal, 6-7 subequal, club solid, nearly 1.60 times the preceding segments combined and about 3 times as long as thick.

Pronotal collar interrupted in the middle; tubercles slightly bigger than in female; scutellum bidentate, teeth equal to pronotal tubercles; wings and legs as in female, except the hind femoral denticulation extends to apical 0.75.

Abdomen about 0.40 of body, oval, first tergite covers almost 0.50 of abdomen; viewed from side length to width 100 : 58; first tergite with obscure, minute scattered punctae, rest with setigerous punctae, penis as long as last 2 tergites.

Type locality : Kirtipur Kathmandu (Nepal)
Distribution Nepal

Antrocephalus dividens (Walker)

1860 *Chalcis dividens,* Walker, *Ann. Mag. Nat. Hist.*, 6 : 357.
1938 *Brachymeria dividens,* Mani, *Cat. Indian Ins.*, 23 : 54.
1976 *Antrocephalus dividens,* Narendran, *Entomon.*, 1 (2) : 185.

Female : Length 5.30 mm. Body generally black; tegulae reddish-black; wings hyaline; legs except fore coxa ferruginous-red.

Head as wide as or a little wider than thorax, distinctly minutely closely punctate; ocellocular space about 0.50 of interocellar space which latter is about 3 times ocellar diameter; scape not reaching front ocelli.

Thorax umbilicately punctate; the punctae separated by almost their own diameter on mesonotum and scutellum; pronotum more closely punctate than mesonotum; pronotal carina bituberculate; scutellum a little less than 1.20 times as long as wide; hind coxae on the inner side densely setigerously punctate; smooth and shiny outside, without tooth; hind femora minutely punctate; fore wing not brown spotted; vein *m* about 0.50 of *sm,* vein *st* reaching to nearly wing tip.

Abdomen conical, subequal to the rest of body, smooth and shiny; first tergite about 0.50 of abdomen shortly carinate on either side of the median longitudinal fovea; second tergite with obscure punctae.

Male Length 4.70 mm. Body black; tips of middle and hind coxae red; fore and middle femora and tibia black, with the tips red; hind tibia and femora ferruginous-red; abdomen slightly shorter than thorax.

Type locality : Sri Lanka
Distribution : Sri Lanka, India : Calicut

Antrocephalus carinigena (Cameron)

1907 *Coelochalcis carinigena,* Cameron, *J. Bombay nat. Hist. Soc.*, 17 : 579.
1938 *Coelochalcis carinigena,* Mani, *Cat. Indian Ins.*, 23 : 65.

Male : Length 4.00 mm. "Black densely covered with long white pubescence, the apex of the anterior tibiae and the greater part of the tarsi rufo-testaceous; wings clear hyaline; nervures black.

Head, pronotum, mesonotum and scutellum rugosely punctured; cheeks clearly longer than eyes, keeled on the outer and inner sides; the inner keel indistinct on the top; scutellum large, narrowed towards the apex; the apical teeth large, as long as wide, irregular; metanotum with 3 areae; central of almost equal width, extending from the base to the apex; lateral areae wider, widened in the middle, the basal part rounded, apical straight oblique; propleurae rugosely punctured; mesopleurae with the basal 0.50 of smooth, finely, widely longitudinally striated; metapleurae rugosely punctured with some round, separated punctures at base; basal segment of abdomen strongly closely aciculated, bare, others punctured, densely pilose; legs densely covered with short, white pubescence.

The apex of scutellum is more distinctly bidentate than it is in *C. carinifrons* Cam. (also from Deesa), which has also the legs red for the greater part."

Type locality Deesa (Bombay)

Antrocephalus pandens (Walker)

1860 *Chalcis pandens,* Walker, *Ann. Mag. Nat. Hist.*, 6 : 357.
1922 *Antrocephalus pandens,* Waterston, *Indian forest Rec.*, 9 (2) : 19.

Legs, tegulae brown; scape, funicle, hind coxae, femora except at base and tip, dark brown; wings generally infumate, spot extends to about 0.33 of the width of wing; vein *pm* shorter than *m*.

"Foem. nigra, conferte punctata, facie excavata, antennis apice rufis, metathorace sulcate, tibies posticis tarsisque rufis, alis hyalinis"

Female : "Black, thickly and minutely punctured, much like *C. dividens* in structure; antennae red at the tips; metathorax with a longitudinal furrow; abdomen a little longer than thorax; tarsi, knees, tips of tibiae, tips of hind coxae, hind femora towards the base, and hind tibiae red; wings hyaline; calli of the fore wings red; length of body 2½ lines; of the wings 3½ lines."

Type locality : Sri Lanka

Antrocephalus varipilosus Cameron

1907 *Antrocephalus varipilosus,* Cameron, *J. Bombay nat. Hist. Soc.,* 17 : 580.
1938 *Antrocephalus varipilosus,* Mani, *Cat. Indian Ins.,* 23 : 63.

Male : Length 5.00 mm. "Black, covered with silvery pubescence; apex of 4 anterior femora and 4 front tarsi dull red, hind femora red; apical third of their tibiae of a duller red; tibiae at base behind suffused with red; wings hyaline, slightly infuscated at apex; nervures black."

"Head and thorax strongly, closely punctured; scutellar teeth short, broad, inconspicuous; post scutellum about 2 times longer than wide, hollowed, with broad margins; areola on metanotum extending from base to apex, slightly narrowed at apex; upper 0.66 hollowed, lower third rugosely punctured; sides are distinctly margined; above is a small triangular area; metapleurae thickly covered with longish silvery pubescence; underside of femora with a white hair fringe; their basal 0.50 black below; flagellum of antennae opaque, covered with white down; scape shining, bare, narrowed at apex; silvery hair on sides of abdomen is mixed with golden; tegulae testaceous."

Type locality : Bombay : Deesa

Species Incertae Sedis

Antrocephalus brevicornis, Strand

1911 *Antrocephalus brevicornis,* Strand, *Faun. Exot.,* 1 : 8.
1938 *Antrocephalus brevicornis,* Mani, *Cat. Indian Ins.,* 23 : 62.

Type locality : Sri Lanka

Antrocephalus fascicornis (Walker)

1871 *Halticella fascicornis,* Walker, *Notes Chalcids,* 43.
1883 *Antrocephalus fascicornis,* Kirby, *J. Linn. Soc. London,* (Zool.) 17 : 63, fig. 24-26.
1938 *Antrocephalus fascicornis,* Mani, *Cat. Indian Ins.,* 23 : 62.

Type locality : India

Antrocephalus longicornutus Strand

1911 *Antrocephalus longicornutus,* Strand, *Faun. Exot.,* 1 : 8.
1938 *Antrocephalus longicornutus,* Mani, *Cat. Indian Ins.,* 23 : 63.

Type locality : Sri Lanka

Antrocephalus tristis Strand

1911 *Antrocephalus tristis,* Strand, *Fauna Exot.,* 1 : 8.
1938 *Antrocephalus tristis,* Mani, *Cat. Indian Ins.,* 23 : 63.

Type locality : Sri Lanka

Megachalcis Cameron

1903 *Megachalcis,* Cameron, *Roy. Asiatic Soc.,* 39 : 96.
1909 *Megachalcis,* Schmiedeknecht, *Gen. Ins.,* 97 : 62.
1938 *Megachalcis,* Mani, *Cat. Indian Ins.,* 23 : 64.

Antennae inserted close together at base of clypeus, with 11 segments; pedicel pyriform; first funicular segment much longer and more slender; occiput acutely margined; prothorax large, roundly produced forwards in the middle; scutellum large, roundly convex, transverse apically; propodeum areolate at base, posterolateral angles with teeth; wings strongly infumate; fore coxae at tip above with a round foliaceous process; hind coxae as long as femur; hind femora with 10 similar teeth; first abdominal tergite longer than the others combined; last segment of the abdomen large and elongate; ovipositor stout, 2 times abdomen.

Type-species : Megachalcis fumipennis Cameron

Megachalcis fumipennis Cameron

1903 *Megachalcis fumipennis,* Cameron, *Roy. Asiatic Soc.,* 39 : 97.
1938 *Megachalcis fumipennis,* Mani, *Cat. Indian Ins.,* 23 : 64.

Type locality : India

Haltichella Spinola

1787 *Chalcis* (partim), Fabricius, *Mant. Ins.,* 1 : 272.
1811 *Haltichella,* Spinola, *Ann. Mus. Hist. Nat.,* 17 : 148.
1829 *Halticella,* Stephens, *Nomen. Brit. Ins.,* 36.
1883 *Halticella,* Kirby, *J. Linn. Soc. London,* (Zool.), 17 : 64.
1904 *Halticella,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 255, 256.
1904 *Microchalcis,* Keffer, *Berlin. ent. Z.,* 49 : 246, 255, 256.
1909 *Halticella,* Schmiedeknecht, *Gen. Ins.,* 97 : 56.
1929 *Halticella,* Masi, *Boll. Soc. ent. Ital.,* 61 : 11-16.
1936 *Haltichella,* Masi, *Bul. Soc. ent. d'Egypte.,* 20 : 252-254.
1938 *Halticella,* Mani, *Cat. Indian Ins.,* 23 : 61.
1949 *Haltichella,* Kerrich & Menon, *Ent. mon. Mag.,* 85 : 207-211.
1951 *Haltichella,* Boucek, *Acta ent. Mus. nat. Pragae,* 27 (1) : 51.
1960 *Haltichella,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan* (C) 11 : 239.
1979 *Haltichella,* Krombein *et al.,* Hymen. N. America, 1 : 861.

Scrobe deep; antennae with 13 segments, inserted close to the mouth, moderately stout; scape shorter than in the allied genus *Hockeria;* first funicular segment minute; frons with pre-orbital carinae not curving inward near ocelli, but shortened; eyes hairy; outside of antennae a carina present; frontogenal suture distinct; scutellum long, with 2 teeth; propodeum without tooth; hind femur below with about 12 minute teeth; fore wings with more or less dark patches; vein *pm* variable; abdomen sessile, shortly-ovate; first tergite occupying nearly 0.50 of the surface, tongue-shaped, with some carinae basally.

Type-species : Haltichella pusilla (Fabricius)

Haltichella inficiens Walker

1860 *Halticella inficiens,* Walker, *ann. Mag. nat. Hist.,* 6 : 357.
1938 *Halticella inficiens,* Mani, *Cat. Indian Ins.,* 23 : 61.

"Mas. Nigra, obscura, confertissime punctata, abdomine basi glabro, tibiis anterioribus apice tarsique anterioribus fulvis, alis albido-hylinis.

Male : Black, opaque, very thickly and minutely punctured, in structure much like the preceding species; abdomen smooth towards the base; anterior knees, anterior tarsi and tips of anterior tibiae tawny; wings whitish hyaline; veins piceous. Length of the body 1¼ line; of the wings 1¾ line."

Type locality : Sri Lanka

Haltichella macrocerus Waterston

1922 *Halticella macrocerus,* Waterston, *Indian forest Rec.,* 9 : 73.
1938 *Halticella inficiens,* Mani, *Cat. Indian Ins.,* 23 : 61.

Male : Length 5.00 mm. Body generally black; pedicel brown; fore and middle legs, hind tarsi and tegulae brown; wings infumate densely behind vein *m* and extending behind as a transverse band, with a second but more obscure transverse cloud before tip; head and thorax closely umbilicately punctate; scutellar process long; mesepimeron with 14 carinae; veins *m* and *pm* subequal; hind femora without lobe; first abdominal tergite occupies 0.60 of dorsum, smooth and shiny.

Type locality Kumaon Himalaya : Bhim Tal.

Haltichella ornatipennis Cameron

1903 *Haltichella ornatipennis,* Cameron, *J. Bombay nat. Hist. Soc.,* 14 : 439.
1938 *Haltichella ornatipennis,* Mani, *Cat. Indian Ins.,* 23 : 61.

Female Length 5.00-6.00 mm. Body black, base of the flagellum and fore legs rufous; wings hyaline with 2 fuscous bands.

The scape of the antennae reaches to the top of the head, has a slight curve and is somewhat dilated at the top; it is more or less rufo-testaceous, as is also the base of the flagellum. The head is closely covered with silvery pubescence, closely rugosely punctured, except on the frontal depression, which is smooth in the centre, or at least only aciculated; the eyes on the inner side are bordered by a distinct keel; the antennal tubercles are smooth and shining. Thorax entirely black, closely and regularly punctured; the scutellum ends in 2 bluntly pointed teeth; median segment opaque, irregularly longitudinally keeled; 2 central keels are distinct and are united at top and bottom, forming thus an enclosed area, which is widest below; pleurae closely and distinctly punctured; basal third of

mesoplurae is strongly and regularly obliquely striated; legs black; fore and middle legs, hinder trochanters and the base of the hinder femora, rufous; hinder femora bear no teeth, but have 2 curves in the middle; the part separating them being rounded and the basal curve is the larger; apex of hinder tibiae is roundly depressed or incised on the outside; wings hyaline; there is a dark cloud at the stigmal region and a larger lighter coloured one beyond it, space separating the 2 being milky-white. The sides of abdomen on the lower part, are more or less rufous.

Type locality Bombay : Deesa

Haltichella rufimanus Walker

1860 *Halticella rufimanus,* Wallker, *Ann. Mag. nat. Hist.*, 6 : 357.
1938 *Halticella rufimanus,* Mani, *Cat. Indian Ins.*, 23 : 61.

"Mas. Nigra, obscura confertissime punctata antennis thorace paulo longioribus, abdomine elliptico parvo basi glabro, tarsis anterioribus rufis, alis fuscis."

Male : Black, opaque, very thickly and minutely punctured; head hardly broader than the thorax; antennae filiform, stout, very compact, a little longer than thorax; prothorax transverse, not broader on each side than in the middle; abdomen elliptical, smooth, and shining towards the base, narrower and much shorter than the thorax; first segment occupying 0.50 of the length; anterior tarsi red; wings brown; veins black, red towards the base; ulna about 0.25 of the length of the humorous; radius shorter than the ulna; stigma extremely small; length of body 2 lines; of the wings 3 lines.

Type locality : Sri Lanka

Haltichella sepyra Walker

1846 *Halticella sepyra,* Walker, *Ann. Mag. nat. Hist.*, 17 : 110.
1938 *Halticella sepyra,* Mani, *Cat. Indian Ins.*, 23 : 61.

Mas. "Picea, antennis pedibusque nigris, metafemoribus, protarsis et mesotarsis rufis, alis limpidis (Corp. long. lin. 2, alar, lin 3½).

Male Body dark piceous, convex; head and thorax punctured; head transverse, nearly as broad as the thorax; vertex broad; front impressed; antennae black, filiform, shorter than body; prothorax transverse, subquadrate, longer than head; hind border concave; sutures of the parapsides distinct or complete; axillae remote from each other; scutellum obconical, having a rim on either side and behind, where it is slightly excavated; propodeum obconical, declining, rugulose; podeon very short; abdomen oval, smooth, shining, shorter and rather narrower than thorax; metapodeon long;

octoon and following segments shorter; legs black; knees and tarsi red; metafemora red thick, each armed with an obtuse basal, tooth having a black edge along its length beneath; metatibiae curved; metatarsi black; wings limpid; nervures piceous; humero much less than 0.50 of the length of the wing; ulna not 0.33 of the length of the humerus; radius nearly as long as the ulna; cubitus very short; stigma very small."

Type locality : Bombay

SPECIES INCERTAE SEDIS

Haltichella erythropus Cameron

1879 *Halticella erythropus,* Cameron, *Mem. Proc. Manchester Lit. Philos. Soc.,* 41 : 41.
1938 *Halticella erythropus,* Mani, *Cat. Indian Ins.,* 23 : 61.

Type locality : Agra

Haltichella tarsalis Walker

1871 *Halticella tarsalis,* Walker, *Notes Chalc.,* 44.
1938 *Halticella tarsalis,* Mani, *Cat. Indian Ins.,* 23 : 61.

Type locality : India

Eugastrochalcis Masi

1929 *Eugastrochalcis,* Masi, *Boll. Lab. ent. Bologna,* 2 : 181.
1938 *Eugastrochalcis,* Mani, *Cat. Indian Ins.,* 23 : 60.

Head viewed from front transverse, triangular; viewed from side shortly ovate; scrobes narrow and deep, with distinct carinate margins, not reaching front ocellus; vertex excavate in the middle; antennae as in *Brachymeria* with annellus conspicuous; cylindrical funicle, funicular segments subquadrate, club indistinctly triarticulate; head umbilicately punctate; thorax short, narrower than thorax; pronotum margined laterally; mesopleural impression deep, with parallel transverse striation; propodeum with the central fovea well developed and margined; fore wings with veins *m* and *pm* subequal, *st* short; abdomen in female elongate, ovate-acute and depressed; first tergite short; tergite 7 short above; ovipositor slightly exserted.

This genus represents a primitive form of Haltichellini.

Type-species : Eugastrochalcis breviceps Masi

KEY TO SPECIES

1. Veins *m* and *pm* subequal; club subequal to one preceding segment; propodeal areola trapezoid — *Eugastrochalcis breviceps* Masi

   Veins *m* and *pm* unequal, *pm* about 1.90 times *m;* club equal to 2 preceding segments combined; propodeal areola not trapezoid — *Eugastrochalcis secundus* Mani & Dubey

Eugastrochalcis breviceps Masi

1929 *Eugastrochalcis breviceps,* Masi, *Boll. Lab. ent. Bologna,* 2 : 182.
1938 *Eugastrochalcis breviceps,* Mani, *Cat. Indian Ins.,* 23 : 60.

Female : Length 4.00 mm. Body black-fuscous, with brown pubescence; tegulae margined pale; tarsi fuscous-brown; fore wings pale yellow, hyaline in the basal 0.33; apical 0.33 yellowish; veins brown.

Head viewed from front transverse, about 0.64 as high as wide, with orbits slightly diverging below; scrobes with outer margin sinuate and ending one ocellar diameter below the fornt ocellus; clypeal margin distinct; eyes glabrous; scape flat above and gradually reduced above; pedicel conical; annellus nearly as long as wide; first funicular segment subequal to pedicel; third funicular segment subquadrate; seventh segment transverse; clubs subequal to the preceding segment, without distinct sutures.

Pronotum rounded above in front; mesopleural fovea trnasversely striate in the lower 0.33; viewed above pronotum about 0.73 times as long as wide; propodeum with numerous irregular fovea, median longitudinal areola subtrapezoid; fore wing about 2.80 times as long as wide; veins *m* and *pm* subequal; *st* about 0.33 of *pm;* hind femora about 0.53 times as wide as long; hind metatarsus subequal to the fifth tarsal segment; tarsal segments 2-3 subequal, slightly compressed.

Abdomen subequal to thorax, with the tergites subshiny, minutely reticulate; first tergite slightly impressed in the middle; tergite 5 with straight margin; terminal tergites reticulately punctate.

Male : Length 3.60 mm. Head slightly less transverse than in female; propodeal areola distinctly margined; abdomen equal to thorax; first tergite as long as wide.

Type locality : Philippines

Distribution : India; Philippines

*Eugastrochalcis secundus** Mani & Dubey

(Fig. 59)

1974 *Eugastrochalcis secundus,* Mani & Dubey, *Mem. School Ent.,* 3 : 6.

Female : Length 5.50 mm. Body black, ocelli and eyes brown; wings hyaline, veins brown; tarsi ferruginous-brown; rest of leg black.

Head viewed from above width : length 100 : 39, head to thorax width 100 : 85; ocellocular space subequal to ocellar diameter, interocellar space equal to 3 ocellar diameters; vertex obtuse, moderately sloping behind occiput, contiguously umbilicately

* This species may have to be transferred to *Neochalcis.*

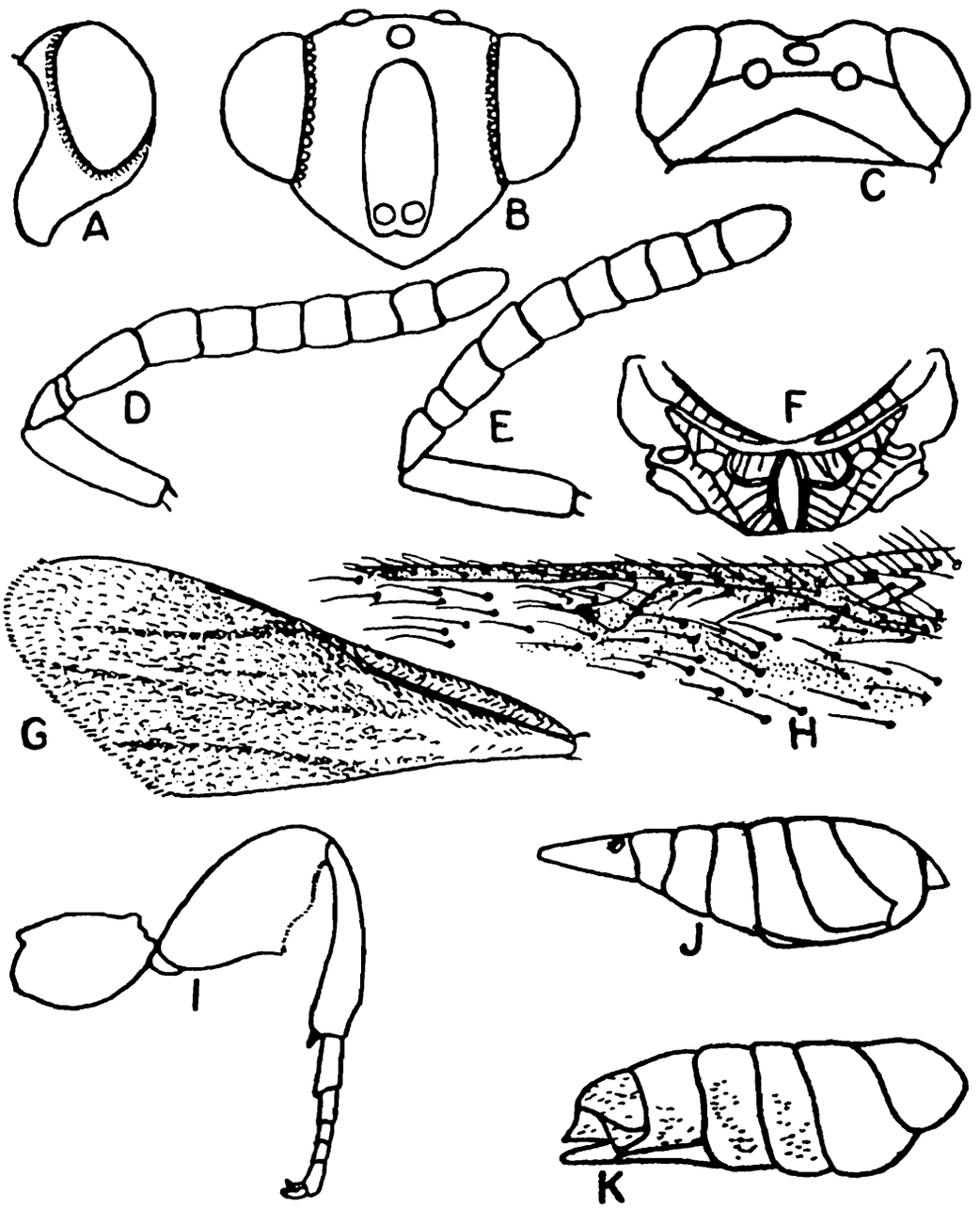

FIG. 59. *Eugastrochalcis secundus* Mani & Dubey : A. Head in profile view, female; B. Head in front view, female; C. Head in dorsal view, female; D. Antenna, male; E. Antenna, female; F. Pronotum, female; G. Fore wing, female; H. Venation, female; I Hind leg, female; J. Abdomen, female; K. Abdomen, male.

punctate; occiput with sculpture like vertex; head viewed in front obtusely triangular, height to width 69 : 100, interorbital border almost parallel; scrobe deep, small, with transverse striolations in the middle; face closely umbilicately punctate; clypeal projection almost cover the mouthparts; viewed from side length to thickness 100 : 50, gena to eye 0.50 of postorbital margin carinate, genal carina absent; antenna inserted close to the mouth border, stout, segments 11 : 1.1.1 7.1; scape about 0.36 of antenna, almost 4.50 times as long

as thick; annellus about 0.40 of pedicel, about 1.60 times as thick as long; first funicular segment longest; segments 2-4 subequal, seventh about 0.80 of the preceding; club apically rounded, almost equal to the preceding 2 funicular segments combined.

Pronotum transverse, about 0.16 of thorax, almost 0.22 times as long as wide, pronotal collar present only at sides, punctae larger than on head, deep, umbilicate, contiguous; mesonotum with complete parapsidal furrows, punctation as on pronotum but distinctly separated, axilla largely smooth; scutellum punctate like mesonotum, almost as wide as long, bidentate, teeth small obtuse; propodeum with areola, lateral teeth absent; mesopleura with transverse striolations; fore wing length to width 100 : 37; veins *sm m : pm* ratio 384 : 100 : 190, *st* subsessile; hind coxa about 1.70 times as long as thick, femora nearly 2.40 times coxa, almost 2 times as long as thick, first large dent almost in the middle and second apical finely pectinate; tibial spur about 0.30 of metatarsus, tibia distinctly thicker apically, subequal to femur; tarsus about 0.80 of tibia, metatarsus about 0.30 of tarsus, second segment 0.70 of metatarsus, third 0.70 of the second, fourth 0.80 of the third, fifth equal to the preceding 2 segments combined, claw almost 0.75 of the preceding tarsal segment.

Abdomen about 0.51 of body, fusiform, mederately depressed, almost 3 times as long as wide, first tergite smooth, shiny; tergites 2-3 minutely punctate and opaque except narrowly along the margin; putctation on other tergites similar; viewed from side length to width 100 : 33, first tergite covers almost 0.25 of the abdomen.

Male : Length 4.25 mm. Body black, eyes and ocelli light brown; tegula and tarsi ferruginous-brown, otherwise agrees with female.

Head agrees with female; antenna 1.90 times the head, stout, segments 11 : 1.1.1.7 1; scape stout, about 0.22 of the antenna, almost 5 times as long as thick; pedicel subglobose, about 0.27 of scape, distinctly thicker apically, 1.30 times as long as thick; annellus transverse, about 0.20 of pedicel; first funicular segment longest, almost 2 times pedicel, 2-3 subequal, 4-5 subequal, 6-7 subequal; club conical apically, slightly shorter than the 2 preceding segments combined.

Abdomen about 0.50 of body, oblong, distinctly depressed above, almost 2.20 times as long as wide, first tergite smooth, shiny; tergites 2-5 with micropunctae except along the margin; viewed from side length to width 100 : 33, first tergite covers almost 0.30 of abdomen.

Type locality Moozhiar (Cardamom Hills).

Distribution Tekkady, Nilambur (Western Ghats).

Euchalcis Dufour

1861 *Euchalcis,* Dufour, *Ann. Soc. Ent. France,* 1 : 8.
1865 *Allocera,* Sichel, *Ann. Soc. Ent. France,* 5 : 379.
1899 *Euchalcis,* Kieffer, *Ann. Soc. Ent. France,* 371, 378.
1904 *Euchalcis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 255, 256.
1909 *Euchalcis,* Schmiedeknecht, *Gen. Ins.,* 97 : 54.
1938 *Euchalcis,* Mani, *Cat. Indian Ins.,* 23 : 60.
1951 *Euchalcis,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (1) : 56.

Antennae long, slender inserted close to the mouth, with 11 segments; scape in the middle with a tooth-like expansion; pedicel longer than the first funicular segment; funicle naked, shiny; scutellum bidentate; propodeum not dentate; fore wing without veins *st* and *pm;* hind femora below in the middle with a stout obtuse tooth and finely denticulate beyond; hind tibia slightly longer than tarsus; hind metatarsus 2 times as long as the second tarsal segment; abdomen in female slightly, conically pointed behind, in male ovate; first tergite only a little longer than others.

Type-species : Euchalcis miegii Dufour

* **Euchalcis birmanus** Mani & Dubey

(Fig. 60)

1973 *Euchalcis birmanus,* Mani & Dubey, *Mem. School Ent.,* 2 : 33.

Male Length 4.00 mm. Body black; fore and middle tibiae brownish-black; tarsi dark brown; head with brownish-black eyes and ocelli; aedeagus reddish-brown.

Head densely clothed with long silvery-white setae; viewed from above length to width 36 : 100; head width to thorax width 90 : 100; ocellocular space slightly less than ocellar diameter; introcellar space about 4 times ocellocular space; frontocellar space subequal to ocellocular space; vertex with large deep contiguous, umbilicate punctae; head viewed in front length to width 100 : 75; eyes little convergent above; face with large, deep, contiguous umbilicate punctae; scrobe with a fine median sulcus and transversely striate; head viewed from side length to width 100 : 45; gena subequal to eye; antenna inserted close to mouth border, slightly reduced apically, segments 11 : 1.1.1 7.1; scape 0.28 of antenna with a characteristic tooth-like process a little below middle; pedicel 0.80 of first funicular segment and as thick as long; annellus minute, 3.60 times as wide as long; first funicular segment longest; second segment 0.80 of first; third equal to second; segments 4-7 subequal but becoming gradually reduced; club solid, slightly more than preceding 2 segments combined, nearly 2.70 times as long thick.

Pronotum transverse, about 3 times as wide as long, with large, deep, contiguous punctae; parapsidal furrows complete; mesonotum

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* This species may have to be placed in *Lasiochalcidia.*

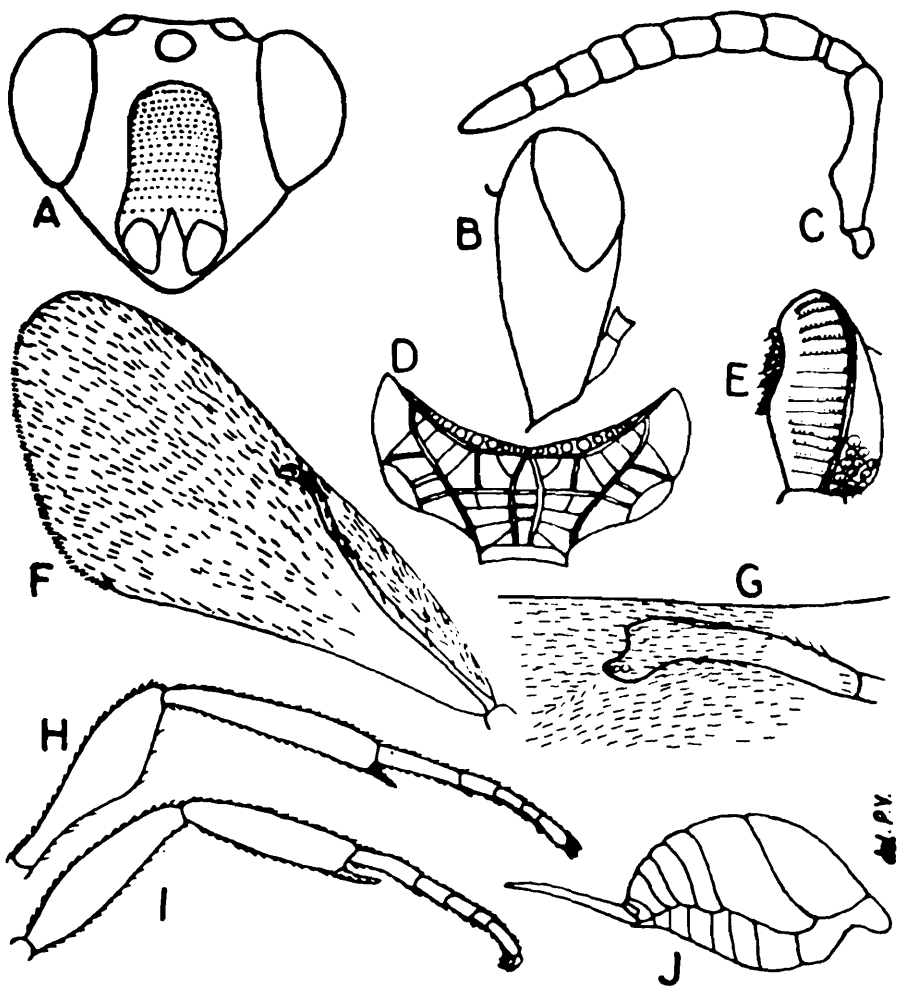

FIG. 60. *Euchalcis birmanus* Mani & Dubey, male : A. Head in front; B. Head in profile view; C. Antenna; D. Pronotum; E. Mesopleura; F. Fore wing; G. Vein *st;* H. Middle leg; I. Fore leg; J. Abdomen in side view.

with punctae smaller than on pronotum, separated with their own diameters; scutellum with large, close, contiguous umbilicate punctae, apex produced into a short bluntly bidentate process; fore femur moderately stout; tibia slender, slightly shorter than femur; tarsus slightly longer than tibia; metatarsus about 0.33 of tarsus; second segment 0.66 of metatarsus; third 0.70 of the second; fourth 0.70 of the third; fifth slightly over 2 times the preceding; middle femur clavate; tibia slender, stouter apically; tarsus slightly shorter than tibia; metatarsus 0.40 of tarsus; second nearly 0.50 of metatarsus; third 0.70 of the second; fourth 0.70 of the third; fifth 2 times the preceding; hind leg clothed with silvery-white pubescence; coxa with moderately, widely separated, minute punctae, 1.80 times as long as thick; femur with large, widely separated punctae, 1.33 times coxa, about 2 times as long as thick, with very fine serration.

Abdomen sessile, 1.80 times as long as thick; first tergite smooth, shiny, except for a few shallow, obscure punctae; posterolaterlly second tergite with well separated, shallow, setigerous punctae on both sides, smooth only in the middle; third tergite with 3 rows of shallow punctae along the posterior margin; other tergites sculptured like third tergite.

Type locality Rangoon (Burma)

Distribution : Burma

This species differs from *Euchalcis myrmeleonae* Mani in the shape of the median longitudinal carinae on propodeum.

*Euchalcis myrmeleonae Mani

1936 *Euchalcis myrmeleonae,* Mani, *Rec. Indian Mus.,* 38 : 470.
1938 *Euchalcis myrmeleonae,* Mani, *Cat. Indian Ins.,* 23 : 417.
1940 *Euchalcis myrmeleonae,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 6.

Male Length 4.00 mm. Body black; antennae reddish-brown; eyes bordered black; scape dark red; all legs red, hind coxae polished very dark red; hind femora bright red, tibiae darker; tegulae bright red; abdomen black.

Head closely umbilicately punctate; scrobes indicated faintly only near the antennal sockets, transversely striate; gena with dense silvery-white hairs as in *Euchalcis trichiocephala* Cameron, but the pubescence on occiput not so dense; ocellocular space about a little less than ocellar diameter; pedicel slightly shorter than the first funicular segment; first funicular segment longest; annellus transverse and as wide as pedicel; second and third funicular segments subequal and each about 0.75 of the first segment; segments 4-6 subequal and each about a little shorter than the third; seventh segment somewhat shorter than the sixth; club long, conically pointed, longer than any of the antennal segments; solid, though with 2 dark transverse bands; pronotum closely, deeply, coarsely and umbilicately punctate; mesonotum not so closely and deeply punctate; scutellum punctate like mesonotum; mesopleural impression transversely corrugated; propodeum with 2 median longitudinal carinae at a distance from each but broadly connected together behind, with a lateral carina diverging from the hind end of the median carina and connected with it in the middle by a transverse carina, with other finer carinae interconnecting with a lateral carinae ending in a spine; hind coxae polished, with fine punctation; hind femora with one large acute basal tooth and apical lobate projection in addition to being finely pectinately toothed; hind metatarsus a little longer than the second tarsal segment; first tergite covering almost 0.50 of the dorsum; shiny; second tergite closely punctate; other tergites shiny in basal part and punctate behind.

Type locality : Madras

* This species may be conspecific with *Lasiochalcidia Pilosella* (Cam.)

Euchalcis trichiocephala Cameron

1907 *Euchalcis trichiocephala,* Cameron, *J. Bombay Nat. Hist. Soc.,* 17 : 579.
1938 *Euchalcis trichiocephala,* Mani, *Cat. Indian Ins.,* 23 : 60.

Female : Length 5.00 mm. Body generally black; legs, except fore coxae, red; antennae red, apical segment black, preceding 2 segments infuscated; head, especially below, thickly covered with long silvery-white pubescence; wings hyaline, veins black.

Front and vertex irregularly punctate; malar space distinctly longer than eyes, which converge slightly above; temples obsolete; eyes behind projecting beyond the occiput, which is narrowed laterally; mandibles reddish in the middle; pro- and mesonotum rugosely punctate; scutellar teeth stout, narrowed towards the apex; space between wider than long; propodeum with a median area, slightly narrowed towards base, apex rounded; 2 indistinct transverse keels medio-longitudinal; at sides, at the base, are 3 areola of which middle largest; inner is 4-angled, obliquely narrowed at base, second is wider than long; apex is dilated in the middle; below, next to central, is a large areola, longer than wide and of equal width; sides of segment have front 0.50 dilated, top projecting upwards into a blunt tooth, lower edge also slightly projecting; propleurae with deep, round, clearly separated punctae; base of mesopleurae smooth, bordered by a row of round foveae, apex by a crenulated furrow; rest of pleurae rugosely punctate-reticulate; abdomen smooth, shining; basal 0.50 bare, apical thickly covered with silvery-pubescence; ovipositor distinctly projecting, broad; hind femora distinctly dilated near top; apex of dilated part with an oblique slope.

Type locality : Deesa : Bombay

Hockeria Walker

1834 *Hockeria,* Walker, *Ent. month. Mag.,* 2 : 21.
1862 *Halticella* (partim), Walker, *Trans. ent. Soc. London* (3) 1 : 361.
1883 *Stomatoceras,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 61.
1904 *Stomatoceras,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 255, 256.
1904 *Hockeria,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 255, 256.
1905 *Centrochalcis,* Cameron, *Z. Syst. Hym. Dipt.,* 5 : 230.
1909 *Hockeria,* Schmiedeknecht, *Gen. Ins.,* 97 : 53.
1909 *Stomatoceras,* Schmiedeknecht, *Gen. Ins.,* 97 : 58.
1912 *Trichohalticella,* Cameron, *Proc. Linn. Soc. NS Wales,* 36 : 637.
1913 *Stomatoceroides,* Girault, *Canad. Ent.,* 45 : 140.
1915 *Hypochalcis,* Girault, *Ent. News,* 26 : 325.
1915 *Stomatoceroides,* Girault, *Mem. Queensland Mus.,* 4 : 341.
1929 *Hockeria,* Masi, *Boll. Soc. Ent. Ital.,* 11-16.
1929 *Hockeria,* Masi, *Boll. Lab. Ent. Bologna,* 2 : 180.
1936 *Hockeria,* Masi, *Bull. Soc. Ent. d'Egypte,* 20 : 252-254.
1938 *Hockeria,* Mani, *Cat. Indian Ins.,* 23 : 59.
1938 *Stomatoceras,* Mani, *Cat. Indian Ins.,* 23 : 63.

1938 *Stomatoceroides,* Mani, *Cat. Indian Ins.,* 23 : 148.
1949 *Hockeria,* Kerrich & Menon, *Ent. month. Mag.,* 85 : 209.
1951 *Hockeria,* Boucek, *Acta Ent. Nat. Mus. Pragae,* 27 (1) : 61.
1955 *Hockeria,* Erdös, *Magyar. Allat.,* 2 : 8, 9, 20.
1960 *Hockeria,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan* (C) 11 : 220.
1979 *Hockeria,* Krombein *et al.,* Hymen. N. America, 1 : 861.

Scrobe not very deep; pre-orbital carinae absent; eyes glabrous or sometimes sparsely hairy in females and densely hairy in males; antennae inserted close to the mouth border; frons concave above the antennal sockets; clypeus small; frontogenal suture present; mandibles with 3 teeth on the right and 2 teeth on the left; antennae long, with 13 segments : 1.1.1.7.3; sometimes appearing as with only 11 segments when club segmentation is obscure, scape long, slender in female and reaching front ocellus, in male not as long; pedicel longer in female than in male; annellus a little longer in female than in male; funicular segments not distinctly thickened; club short; pronotum not fringed behind; scutellum with weakly developed lobes behind, sometimes even indistinct; propodeum without lateral costulae, but areola distinct; wings with dark patches; vein *pm* variable, sometimes absent and sometimes well developed; hind femora usually with 2 lobes followed by dense, small pectinate teeth; abdomen pointed in female and oblong in male; first tergite without parallel carinate keel at base but with an obscure fovea in the middle basally, long, occupying almost 0.50 of the dorsum, smooth in female, but closely punctate in male.

Type-species *Hockeria bispinosa* Walker

KEY TO SPECIES

1.	Club solid	2
	Club biarticulate	*Hockeria atra* Masi
2.	Pedicel equal to the first 2 funicular segments combined	*Hockeria ayyari* (Gahan)
	Pedicel short	3
3.	Pedicel subglobose; first funicular segment longest	*Hockeria keralensis* (Mani & Dubey)
	Pedicel not subglobose	4
4.	Vein *pm* subequal to *m*	*Hockeria indica* (Mani)
	Vein *pm* hardly 0.33 of *m*	*Hockeria nilgiriensis* (Mani & Dubey)

Hockeria atra Masi

1929 *Hockeria atra,* Masi, *Boll. Lab. ent. Bologna,* 2 : 180.
1938 *Hockeria atra,* Mani, *Cat. Indian Ins.,* 23 : 59.

Female : Length 3.00 mm. Body black; scape concolorous with body; flagellum fuscous-brown and partly also pale yellow; fore legs basally, tibiae apically, tarsi except metatarsus brown, hind

metatarsus fuscous; fore wing with transverse fuscous-brown band behind veins, reaching to 0.66 of wing width.

Head viewed from front triangular, about 1.24 times wider than long; viewed from the side as long as thick; face almost flat; scrobe narrow, not margined, deep, finely regularly transversely striate on higher magnification, reaching front ocellus but separated from it by one ocellar diameter; facial fovea margined at the orbit; genal carina vestigial; eyes glabrous; interocellar space equal to ocellar diameter; scape about 0.50 of flagellum; club biarticulate; thorax with setigerous, contiguous punctae; scutellum subequal to scutum; propodeum with median areola narrowly hexagonal; posterolateral angle obtuse; fore wings clothed with setae except basally; about 2.80 times as long as wide; hind femora about as long as wide; abdomen fusiform, shiny, about as wide as long; first tergite almost 0.50 of surface, with reticulate sculpture.

Type locality Puri

Hockeria ayyari (Gahan)

1919 *Stomatoceras ayyari,* Gahan, *Proc. US. nat. Mus.,* 56 : 518.
1921 *Stomatoceras ayyari,* Ramakrishna Ayyar, *Rep. Proc. Third ent. Meet. Pusa,* 30.
1938 *Stomatoceras ayyari,* Mani, *Cat. Indian Ins.,* 23 : 64.

Female Length 8.00—9.00 mm. Body generally black; wings hyaline basally, faintly infuscate apically, with a dark brown spot behind tip of veins *sm* and *m,* extending behind almost to the middle of wing, 2 narrow longitudinal brown streaks, one from the vein *st* and another from behind the brown spot.

Head deeply punctate; scrobes wide, deep, coarsely punctate laterally and coriaceous in the middle, margin strongly carinate, carinae extending upward above the front ocellus to meet each other; vertex sloping behind, not clearly separated from the occiput; gena with well developed carina; antennae separated by a strong keel basally at the sockets, with 11 segments; pedicel about 2 times as long as the first funicular segment and slightly shorter than or even subequal to the second funicular segment; remaining funicular segments gradually becoming shorter, last being subquadrate; club solid, conic-ovate, about 2 times as long as the preceding segment.

Thorax coarsely umbilicately punctate, pronotal collar acutely carinate, carina becoming evanescent dorsally, pronotum unarmed posteriorly; scutellum carinately margined and ending apically in a wide bidentate projection; mesopleura coarsely longitudinally striate above, smooth in the lower 0.33; metanotum with coarse longitudinal striations; propodeum rugosopunctate, with short, obtusely pointed projections behind on either side, with a distinct carina on each side of the spiracle and 2 parallel carinae medially, separated by distance equal to that between the scutellar teeth; hind femora beneath with

2 broad shallow emarginations and finely denticulate to nearly 0.66 of the length; abdomen subequal to the rest of body; first tergite largest, tergites 1-5 finely closely punctate and smooth basally, laterally more coarsely punctate; tergite 6 more coarsely punctate uniformly; tergite 7 compressed into a keel above and coarsely punctate at the sides.

Type locality . Coimbatore

Host *Parasa lepida*

Hockeria keralensis Mani & Dubey

(Fig. 61)

1974 *Hockeria keralensis,* Mani & Dubey, *Mem. School Ent.,* 3 : 8.

Male Length 3.00 mm. Body black; eyes and ocelli dark brown, tegula pale brown; wings hyaline, spots faint, veins dark brown.

Head viewed from above width: length 100 : 30, slightly wider than thorax, ocellocular space about 0.50 of ocellar diameter, interocellar space 4.50 times ocellar diameter; pre-orbital carina acute, faintly encircling front ocellus; vertex narrow, subacute, sharply sloping behind; occiput closely umbilicately punctate; head viewed in front subtrapezoid, length to width 87 : 100; scrobe wide, deep with obscure transverse striolations in the middle; clypeal projection covering labrum and mandible; viewed from side height to thickness, 100 : 58, gena to eye 55 : 100, closely umbilicately punctate, genal carina absent; antenna inserted close to the mouth border, long, slender, segments 11 : 1 1 1 7.1; scape moderately thickened at basal 0.70, 5 times as long as thick, about 0.21 of antenna; pedicel subglobose, as long as thick; annellus 0.20 of pedicel; first funicular segment longest, almost 1 75 times as long as thick, segments 2-6 subequal, seventh about 0.80 of the sixth; club equal to about 0.75 of the last 2 funicular segments combined.

Pronotum 0.26 times as long as thick, faint collar on sides only, coarsely umbilicately punctate; mesonotum with small, shallow contiguous punctae; parapsidal furrow complete; scutellum as long as mesonotum, 1.25 times as long as wide, punctae as on mesonotum, minutely bidentate; propodeum with 2 submedian carina; mesopleura with fine transverse striolations; fore wing length to width 100 : 40, veins *sm : m : pm* ratio 400 : 100 : 100, *st* subsessile; hind to fore wing 73 : 100; hind coxa 1.60 times as long as thick, femora 1.40 times coxa, finely closely punctulate, 1.75 times as long as thick, fine denticulation below 0.58, with one dent in the middle and bulges beyond; tibia subequal to femur, curved; tarsus nearly 0.83 of tibia, spur nearly 0.33 of metatarsus, metatarsus about 0.35 of tarsus, second segment slightly shorter than metatarsus, 3-4 subequal, fifth about 1.60 times the preceding.

Abdomen nearly 0.42 of body, fusiform, viewed from above moderately compressed, first tergite covers almost 0.50 of dorsum, shiny, smooth viewed from side length to width 100 : 47; other tergites with setigerous punctae.

Female , Length 3.75 mm. Body black, head black, antenna black except dark brown pedicel and annellus, eyes and ocelli chocolate-brown, wings hyaline, with 3 faint brown bands, one behind vein *m* darkest, one at the extreme tip very slight, pale spot in front distinct, brown infumation surrounding veins *m* and *st;* fore coxa black, trochanter, apical tip of femur, tibial tip and tarsus ferruginous-brown, rest black, middle trochanter, basal 0.25 of femur, apical 0.25 of tibia and tarsus ferruginous-brown, rest black, hind leg except dark reddish-brown tarsus, black, abdomen black.

Head from above width : length 100 : 39, ocellocular space 0.50 of ocellar diameter, interocellar space equal to 3 ocellar diameters; pre-orbital carina strongly encircling front ocellus; front ocellar space 0.50 of ocellar diameter; head viewed in front subtrapezoid, length to width 84 : 100; viewed from side height to thickness 100 : 60, gena to eye length 43 : 100, closely umbilicately punctate; antenna with 11 segments: 1.1.1.7.1; scape slender, about 0.29 of antenna, almost 7 times as long as thick; pedicel nearly 0.30 of scape, slender, distinctly thicker apically; annellus transverse, about 0.30 of pedicel, first funicular distinctly longer, 2-7 subequal; club equal to the preceding 2 segments combined.

Thorax proportions and sculpture as in male; propodeum with 2 submedian carinae, rest as in male, mesopleura as in male except the deeper transverse striolations; fore wing length: width 100 : 38, veins *sm : m : pm* ratio 600 : 100 : 100, *st* subsessile; hind to fore wing 70 : 100; hind coxa 1.50 times as long as thick, femora 1.23 times coxa, almost 2 times as long as thick, fine denticulation below apical 0.25; tibia slightly shorter than femur, tarsus 0.90 of tibia, spur 0.50 of metatarsus, metatarsus 0.16 of tarsus, second segment 1.30 times metatarsus, 3-4 subequal, fifth 1.70 times the preceding.

Abdomen about 0.40 of body, first tergite covers almost 0.50 of abdomen; viewed from side length to width 100 : 56; all tergites, except first and second, with setigerous punctae in the posterior 0.50.

Type locality : Cardamom Hills : Achankovil, Moozhiar

This species differs from *Hockeria atra* Masi in the sculpture of propodeum, in the proportions of wing length and width and in the fainter clouding of the fore wing. It is also distinctly smaller It resembles *Hockeria susterai* Boucek, but differs in the pedicel being 3 times as long as wide, club in female being equal to 2 segments combined, first tergite being almost 0.50 of abdomen, vein *m* being 3.50 *st.*

Hockeria indica (Mani)

1936 *Stomatoceroides indica,* Mani, *Rec. Indian Mus.,* 38 : 471.
1938 *Stomatoceroides indica,* Mani, *Cat. Indian Ins.,* 23 : 148.

Female Length 4.75 mm. Body black; head black; antennae reddish-brown; thorax black; legs dark reddish-brown; hind femora somewhat lighter, wings hyaline.

Head slightly wider than thorax; sides of scrobes carinately margined; scrobe surface transversely striate; rest of face irregularly punctate; gena densely setose; occiput closely umbilicately punctate; front ocellus within the scrobe; ocellocular space equal to the ocellar diameter, with a deep impression between the ocellus and eye; scape equal to pedicel, annellus and first 3 funicular segments combined, stout, crooked and widened apically; pedicel short; annellus wider than long; the first 3 funicular segments subequal; segment 4 slightly shorter than the third; fifth nearly equal to the fourth; sixth and seventh each about 0.75 of the fourth; club solid, conical, slightly more than 2 times the first funicular segment; thorax closely umbilicately punctate; scutellum with a carinate margin, with broad apical spinous processes, blunt and widely separated; sculpture as on the mesonotum; propodeum rugose, deepest in the middle, with spinous carinae on each side; hind femora finely ciliated and denticulate beneath from about the basal 0.25 onwards; fore wing with vein *pm* subequal to or very slightly longer than vein *m;* abdomen conical, subequal to the rest of body; first tergite occupies almost 0.50 of the dorsum, sparsely punctate; other tergites closely punctate and pubescent; the style-like posterior elongation of abdomen about 0.50 of the rest of abdomen.

Type locality : Waltair

Hockeria nilgiriensis Mani & Dubey

(Fig. 61)

1974 *Hockeria nilgiriensis,* Mani & Dubey, *Mem. School Ent.,* 3 : 11.

Female : Length 5.75 mm. Body black; head black, eyes and ocelli deep dark brown; wings hyaline with 2 blackish-brown bands, one covering vein *m* and behind darkest and another band apical, posterior margin of which gradually fainter; fore and middle tarsi brownish-black, legs otherwise completely black.

Head vewed from above with : length 100 : 22, head width to thorax 100 : 90, nearly 1.25 times the ocellar diameter, interocellar space nearly equal to 3 ocellar diameters; moderately acute pre-orbital feeble carina encircles front ocellus; vertex narrow, subacute, sloping behind, with small shallow, contiguous punctae; occiput sculptured like the vertex; head viewed in front triangular, height to width 100 : 87, interorbital border almost parallel; scrobe wide, shallow,

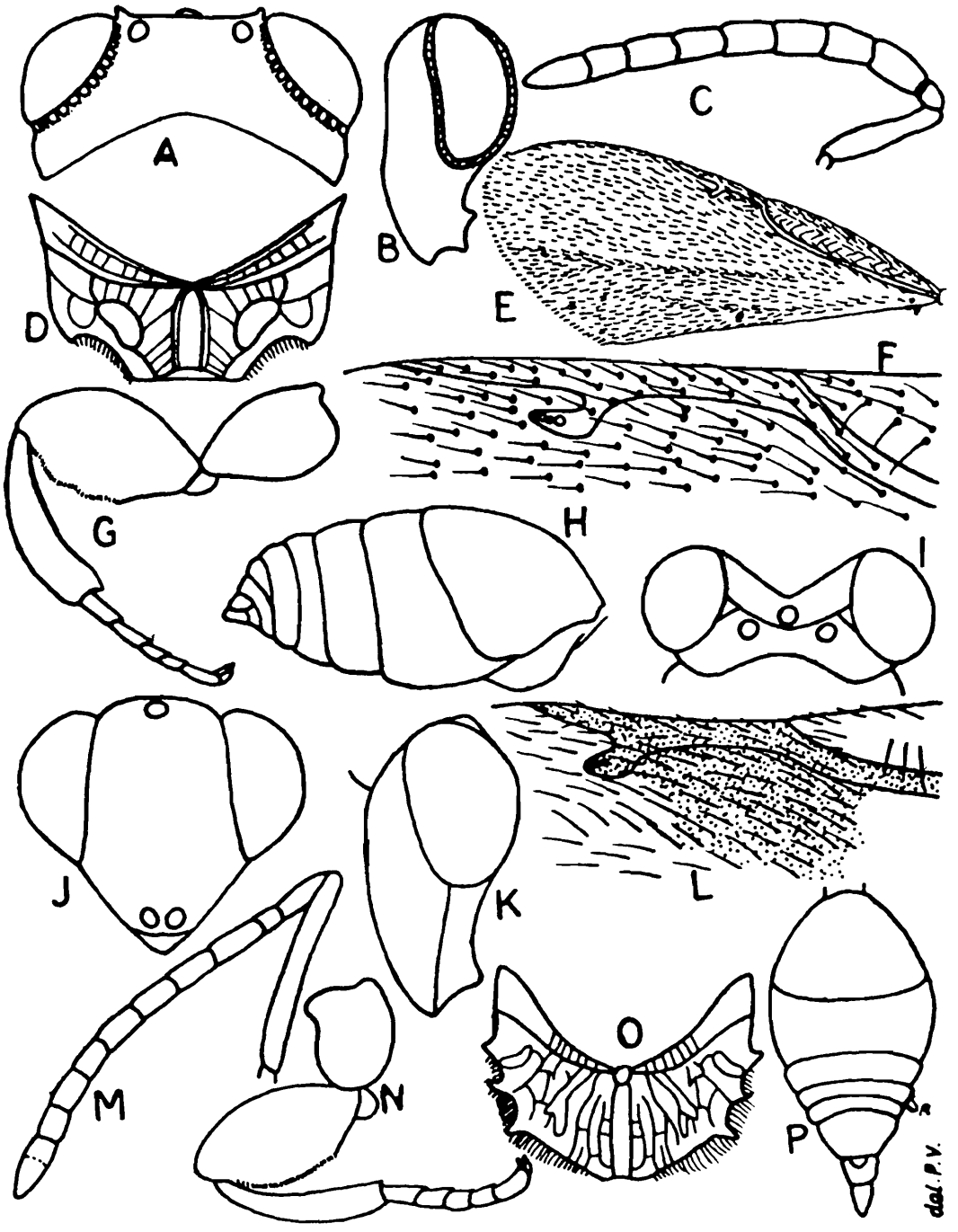

FIG. 61. A-H. *Hockeria keralensis* Mani & Dubey, male: A. Head in dorsal view; B. Head in profile view; C. Antenna; D. Propodeum; E. Fore wing; F. Fore wing venation; G. Hind leg; H. Abdomen; I-P. *Hockeria nilgiriensis* Mani & Dubey, female : I. Head in dorsal view; J. Head in front view; K. Head in profile view; L. Fore wing venation; M. Antenna; N. Hind leg; O. Propodeum; P. Abdomen in dorsal view.

with close, minute punctae in the middle; face with large, close umbilicate punctate area; clypeal projections almost cover the mouth parts; head viewed from side length to thickness 100 50; gena to eye 82 100, closely umbilicately punctate, genal carina present and well developed; antenna inserted close to the mouth border, long,

slender, segments 11 : 1 1 1 7 1; scape long, almost 9 times as long as thick, about 0.29 of antenna; pedicel elongate, about 3.50 times as long as thick and 0.30 of scape; annellus about 0.30 of pedicel; first funicular segment longest, slightly shorter than pedicel, segments 2-4 subequal, 5-6 subequal, seventh slightly shorter than the sixth; club 2 times the last funicular segment, 2.70 times as long as thick, with a spurious suture at basal 0.60.

Pronotum transverse, about 0.13 of thorax, almost 0.20 times as long as wide, collar faint, indicated at the sides only, closely umbilicately punctate; mesonotum with deep, contiguous punctae, parapsidal furrows faint; scutellar margin carinate, bidentate, punctae as on mesonotum; propodeum with 2 strong submedian carinae, other longitudinal carinae connecting the 2 by transverse carinae, laterally with 2 conspicuous acute teeth and one smaller and obtuse tooth anteriorly; mesopleura with fine transverse striolations; fore wing length : width 100 : 36; veins *sm : m : pm* ratio 346 : 100 : 33, *st* subsessile; hind to fore wing 80 : 100; hind coxa about 1.40 times as long as thick, femora almost 2 times coxae, 2 times as long as thick, with fine denticulation below; tibia distinctly thicker apically, subequal to femur; tarsus about 0.85 of tibia, metatarsus about 0.24 of tarsus, spur about 0.33 of metatarsus, 2-3 tarsal segments equal, fourth slightly shorter than the third, fifth 1.60 times the preceding.

Abdomen nearly 0.50 of body, 2 times as long as wide, fusiform, moderately flattened above, smooth, shiny; first tergite at side posteriorly, second tergite in posterior 0.50, third posteriorly with opaque micropunctae; viewed from side length to width 100 : 50, first tergite covers almost 0.44 of abdomen, last tergite with large setigerous punctae.

Type locality Nilambur-Gudalur Road
Distribution Nilgiri Hills

Species Incertae Sedis

Hockeria esterhazy (Fernando)

1957 *Stomatocera esterhazy,* Fernando, *Ceylon J. Sci.,* 1 (1) : 16.

Male : Length 2.70 mm. Body black; head black slightly wider than thorax; vertex narrow; occiput and clypeus deeply punctate; mandibles black, with reddish apices; eyes red; ocelli brownish; front ocellus just within scrobes, ocellocular space equal to ocellar diameter; antennae inserted below level of lower orbital borders, with 11 segments; first 4 segments yellowish-brown, rest of antenna dark brown to almost black; tip a little lighter; no annellus; scape very long, about 0.50 of antenna, slightly curved and expanded apically; second segment slender basally, expanded apically, about 3 times as long as segment 3, which is the shortest; fourth segment shorter

than second segment; other segments equal to the fourth; terminal segment conical and about as long or longer than second; segments 5-11 clothed with fine setae; thorax black, deeply punctate and pubescent; scutellum terminating in a small bidentate plate; propodeal spine short; coxae, femora and tibiae black; torchanters and apices of femora and tibiae yellow; hind legs somewhat darker in colour; wings variegated; abdomen conical, black, about 0.75 of thorax; second tergite about 0.50 of abdomen, polished, other tergites pubescent; posterior abdominal stylus short, dark brown.

Type locality : Kumbolgama (Ceylon)

Neochalcis Kirby

1883 *Neochalcis,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 54, 63.
1904 *Neochalcis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 255, 256.
1909 *Neochalcis,* Schmiedeknecht, *Gen. Ins.,* 97 : 54.
1938 *Neochalcis,* Mani, *Cat. Indian Ins.,* 23 : 59.
1951 *Neochalcis,* Boucek, *Acta ent. Mus. Nat. Pragae,* 27 (1) : 40.

Antennae short, finely pubescent, inserted on level of lower orbital border; with 11 segments, (13 if club is 3 articulated), scape short, pedicel and first funicular segment short; club apparently triarticulate; scrobe shallow; pre-orbital carina absent; parapsidal furrows distinct; propodeum without teeth; fore wing with *pm* distinct, usually smoky; hind femora with a stout, dentate tubercle below in the middle; abdomen sessile, conical in female, ovate in male; tergites gradually becoming shorter, the first tergite hardly 0.50 of the second.

Type-species : Neochalcis osmicida Saunders

Neochalcis myrmeleonae Mani

1936 *Neochalcis myrmeleonae,* Mani, *Rec. Indian Mus.,* 38 : 471.
1938 *Neochalcis myrmeleonae,* Mani, *Cat. Indian Ins.,* 23 : 147.
1940 *Neochalcis myrmeleonae,* Pruthi & Mani, *ICAR Misc. Bull.* 30 : 5.

Female : Length 1.50-2.00 mm. Body very dark reddish-brown; antennae yellowish-brown; abdomen reddish.

Head almost as wide as thorax, with a leathery sculpture, finely pubescent; ocellocular space a little more than ocellar diameter; scape a little more than 0.50 of the funicle; pedicel a little longer than the following 2 segments combined; funicular segments gradually becoming thicker and shorter; club subequal to pedicel, with the basal segment longest, terminal segment conical; thorax coarsely umbilicately punctate, punctae not very close together but well separated; scutellum subreticulately sculptured; abdomen shorter than thorax and head combined; second tergite occupying almost 0.50 of the dorsum, minutely sculptured.

Type locality : Madras

Host : Myrmeleontidae

Neochalcis forticaudis Cameron

1906 *Neochalcis forticaudis,* Cameron, *J. Bombay nat. Hist. Soc.,* 17 : 96.
1938 *Neochalcis forticaudis,* Mani, *Cat. Indian Ins.,* 23 : 59.

Female Length 7.00 mm. "Black, densely covered with silvery pubescence, hind coxae and femora bright red, hind tibiae of a darker red, darker behind, 4 anterior tarsi red, tinged with yellowish fulvous; wings hyaline, nervures black.

Head rugosely punctured, front laterally reticulated; frontal depression finely closely transversely striated, except shortly below the middle and above the bottom. The temples are more closely reticulated, malar space more strongly; stoutly keeled on the outerside; above, below the eyes, a raised triangular space, sharply pointed below; apex of scutellum not quite rounded, slightly rounded incised in the middle; metanotum stoutly irregularly reticulated, with a small smooth triangular area near the top in the middle; sides are broadly rounded, densely covered with long white hair; basal abdominal 5 segments shining, closely, finely punctured; except at base the sixth segment coarsely rugosely reticulated-punctured; apical segments on the sides are thickly covered with long white pubescence.

Neochalcis is the only described genus into which this species will fit. The single large tooth on the centre of the hind femora is bluntly pointed; the rest is minutely serrate. The ovipositor is short, stout, obliquely narrowed at tip."

Type locality Quetta

Tribe Hybothoracini

1951 *Hybothoracini,* Boucek, *Acta ent. Mus. Nat. Pragae,* 27 (1) : 75.
1960 *Hybothoracini,* Habu, *Bull. Inst. Nat. Agric. Sci., Japan,* (C).

Fore wings with vein *m* not directly on the front margin but a little behind and parallel to it, vein *pm* absent; vein *st* rudimentary; body often sparsely punctate.

Key to Genera

1. Propodeum with the posterolateral angles extending behind to form long horns at the sides of the base of abdomen — *Hybothorax* Ratzebug

   Propodeum without the posterolateral angles produced behind into hornlike prolongations at the sides of abdomen — 2

2. Scutellum apically either bidentate or with a bilobed process — 3

   Scutellum rounded or subtruncate behind, never with teeth; propodeum nearly flat, horizontal; head viewed from above not narrow; frons without conspicuous silvery white hairs — 4

3. Head in side view strongly compressed; propodeum strongly declivous	*Oxycoryphus* Cameron
Head in side view not strongly compressed; propodeal areola connected by carinae with the lateral acute teeth	*Oxycoryphus* Cameron
4. Clypeus conspicuously produced in front in a quadrate disc, covering labrum and part of mandibles, scrobe shallow; antenna very slender, long; thorax only sparsely punctate	*Peltochalcidia* Steff. (female)
Clypeus not produced in front into a quadrate lobe over the labrum	5
5. Antennae slender, first funicular segment not very much shorter than the second, funicular segments subequal, though gradually becoming slightly shorter towards tip of antennae; scape long, slightly more slender in the apical 0.50 than basally; epipygium with a median keel	6
Antennae short; scape sometimes incised in the apical 0.50; first funicular segment reduced to an annellus	7
6. First abdominal tergite basally with 2 short, distinct keeled ridges	*Euchalcidia* Masi (female)
First abdominal tergite basally often with a fovea, never with a keeled ridge	*Invreia* Masi (female)
7. Clypeus with a semi-circular imbricate lobe over the labrum; thorax shiny, only sparsely punctate; propodeum subhorizontal	*Peltochalcidia* Steff. (male)
Clypeal edge in front only slightly raised, not overturned to form a semi-circular imbricating roof over labrum	8
8. First abdominal tergite as in female with 2 distinct keels basally and a small fovea in between	*Euchalcidia* Masi (male)
First abdominal tergite with only a single fovea but without any trace of keels at the sides of the fovea	*Invreia* Masi (male)

Oxycoryphus Cameron

1904 *Oxycoryphus,* Cameron, *Entomologist,* 37 : 109.
1909 *Oxycoryphus,* Schmiedeknecht, *Gen. Ins.,* 97 : 59.
1927 *Lasiochalcidia,* Masi, *Mem. Soc. Ent. Ital.,* 6 : 209, 220.
1929 *Dromochalcidia,* Masi, *Boll. Lab. Ent. Bologna,* 2 : 185.
1938 *Oxycoryphe,* Mani, *Cat. Indian Ins.,* 23 : 52. (error for Oxycoryphus)
1946 *Oxycoryphiscus,* Ghesquiere, *Rev. Zool. Bot. Afr.,* 39 : 368.
1951 *Anoplochalcidia,* Steffan, *Mem. Mus. Nat. Hist. Nat.* (A) 4 : 79.
1951 *Lasiochalcidia,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (1) : 97.
1960 *Lasiochalcidia,* Habu, *Bull. Nat. Ins. Agric. Sci., Japan,* (C) 11 : 290.

Head transverse, narrow, depressed behind eyes, triangular; densely clothed with silvery-white long setae; scrobe shallow, not distinctly defined; malar space in female not less than eye; eyes prominent, glabrous or only obscurely hairy; clypeus short;

mandibles with 3 teeth; antennae inserted close to clypeus, slightly away from the frontoclypeal suture; in female long, slender, with pedicel longer than funicular segments; with 11 segments; first funicular segment not forming annellus, as long as or longer than the second segment; club unsegmented; antennae in male with scape shorter and stouter, often with a slight protuberance above base; thorax high; pronotum with hind margin fringed; scutellum explanate, bifid or bilobed apically; propodeum distinctly declivous; with lateral costae bearing 1-2 teeth; wings sparsely hairy, with vein *m* short; *pm* absent, *st* rudimentary; legs long; hind femora below with triangular projection near base and a rounded lobe near tip, besides being finely denticulate in between; abdomen sessile ovate, not produced behind, usually equal to thorax; first abdominal tergite occupying about 0.50 of the dorsum and without basal furrows or carinae.

The species parasitize Myrmeleontidae and rarely Lepidoptera.

Type-spcies *Oxycoryphus pilosellus* Cameron

KEY TO SPECIES

1.	First funicular segment short, 0.50 of pedicel..	*O. trisulius* (Mani & Dubey)
	First funicular segment longer than 0.50 of pedicel	2
2.	First funicular segment about 0.65 of pedicel.	*O. mysorensis* (Mani & Dubey)
	First funicular segment equal to pedicel	*O. indicus* (Mani & Dubey)

Oxycoryphus trisulius (Mani & Dubey)

1974 *Lasiochalcidia trisulia*, Mani & Dubey, *Mem. School Ent.*, 3 : 13.

Female Length 3.00. Body black; head black, eyes and ocelli brownish-black, antenna, except the ferruginous-brown scape and pedicel-black; tegulae ferruginous-brown; fore and middle coxae black, rest ferruginous-brown; hind leg except coffee-brown tarsi, black; wings hyaline; veins brownish-black.

Head viewed from above width to length 100 : 29, head width to thorax width 100 : 90; ocellocular space about 0.50 of ocellar diameter, interocellar space 3 times ocellar diameter, front ocellar space equal to ocellar diameter; pre-orbital carinae moderately acute, encircling front ocellus; vertex narrow, subacute, sloping behind to occiput, smooth, shiny, with very faint micropunctae; occiput smooth, with small, shallow, contiguous punctae; head viewed in front triangular, height to width 85 : 100, frontal impression almost lacking; scrobe impressed, with fine transverse striolations, face with large, contiguous umbilicate punctae; clypeal projection covers almost mouth parts; head viewed from side width to length 55 : 100, gena to eye length 80 : 100, genal carina faint, with large, contiguous umbilicate punctae, posterior margin not conspicuously carinate;

antennae inserted close to the mouth border, with segments 11 : 1.1.8.1; scape long, slender, almost reaching front ocellus, basal 0.33 swollen, almost 7 times as long as thick, about 0.31 of antenna; pedicel elongate, distinctly thicker apically, about 3 times as long as thick, about 0.36 of scape; first funicular segment 0.50 of pedicel, funicular segment 1-8 subequal, apical segments becoming slightly thicker; club about 1.20 times as long as the preceding 2 segments combined, almost 2.70 times as long as thick.

Pronotum almost 3.50 times as wide as long, about 0.17 of thorax, punctae large, separated by their own diameters, posterior margin closely setigerously punctate; mesonotum with faint parapsidal furrows, sculpture as on pronotum; scutellum trapezoid, tooth absent, punctae slightly larger than on mesonotum, interspaces nearly 1.50 times the punctae diameter, punctae sparse in the disc but more close along the margins; propodeal areola about 2.50 times as long as wide, with 3 subacute teeth laterally; mesopleura with fine transverse striolations; fore wing length to width 100 : 37; veins *sm* : *m* ratio 500 : 100; *pm* absent, *st* sessile; hind to fore wing 100 : 136; hind coxa about 1.50 times as long as thick; femora 1.50 times coxa; almost 1.80 times as long as thick, one acute tooth on basal 0.30, followed by fine serration below, one bulge beyond subapically; tibia curved, about 0.90 of femur, moderately thicker apically, spur 0.33 of metatarsus; tarsus 0.75 of tibia, metatarsus 0.27 of tarsus, second segment 0.60 of metatarsus, segments 3-4 subequal, fifth nearly 2 times the preceding.

Abdomen about 0.45 of body, viewed from above oval, length to width 100 : 55; first tergite to abdomen 66 : 100, shiny smooth; first tergite with 2 strong, short, keeled carinae basally on either side of a median cup-shaped depression, otherwise with long setae; first and second tergite with fine micropunctae; viewed from side length to width 100 : 58.

Type locality : Nepal : Trisuli

Oxycoryphus mysorensis (Mani & Dubey)

(Fig. 63)

1974 *Lasiochalcidia mysorensis,* Mani & Dubey *Mem. School Ent.,* 3 : 15.

Female : Length 5.00 mm. Body black, head black; ocelli and eyes ferruginous-brown; scape black except for ferruginous-brown tip, pedicel and first funicular segment ferruginous, rest of antenna ferruginous-black; fore coxa black, basal 0.50 of femur black, rest of leg ferruginous-brown, middle coxa black, basal 0.75 of femur blackish-brown, otherwise ferruginous-brown; hind coxa brownish-black, rest of hind leg ferruginous-brown; tegulae brownish-black; wings subhyaline, faint yellow infuscation about vein *m*.

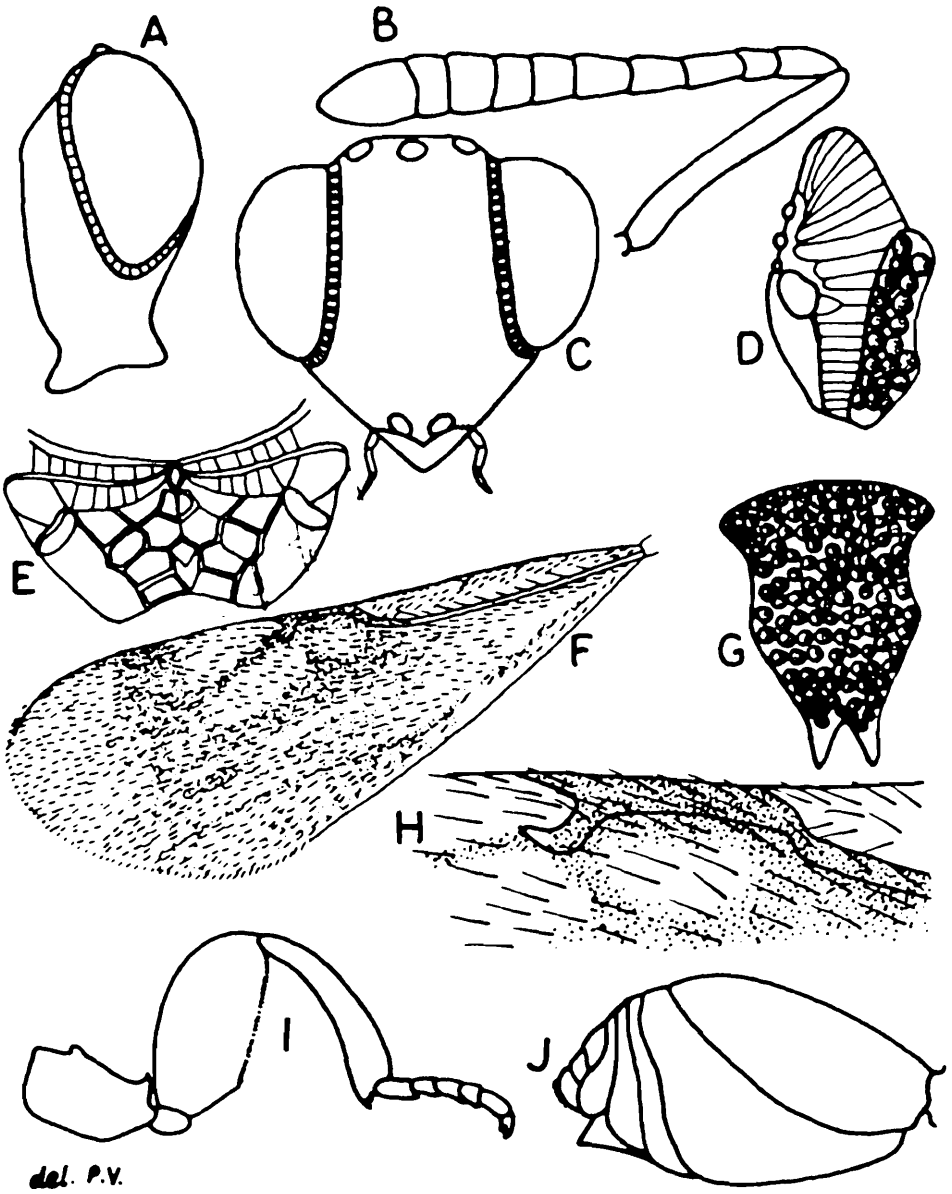

FIG. 62. *Oxycoryphus indicus* (Mani & Dubey), female : A. Head profile, B. Antenna; C. Head in front; D, Mesopleura; E. Propodeum; F. Fore wing; G. Scutellum; H. Fore wing venation; I. Hind leg; J. Abdomen in lateral view.

Head viewed from above width to length 21 : 100; nearly as wide as thorax; ocellocular space subequal to ocellar diameter, front ocellar space nearly 1.50 times ocellar diameter; moderately acute pre-orbital carina encircling front ocellus, where the carina is less prominent; vertex narrow, subacute, sloping behind to occiput, with small, shallow contiguous umbilicate punctae; head viewed in front triangular, height to width 89 : 100, interorbital border distinctly diverging below, frontal impression almost lacking; scrobe with very fine transverse striolations, face from the middle of the orbital border

downwards with contiguous, setigerous, umbilicate punctae; punctae relatively sparse and hairy clothing less dense above, clypeal projection almost covers the mouthparts; viewed from side width to height 44 : 100, gena below punctation very sparse, above on gena dense; gena equal to eye length, posterior margin with a conspicuous carina; antenna inserted close to mouth border, about 2.60 times height of head, segments 11 : 1.1.8.1; scape long, slender, reaching front ocellus, distal 0.50 atennuate, almost 10 times as long as thick, about 0.33 of antenna; pedicel elongate, distinctly thicker apically, about3.30 times as long as thick and about 0.33 of scape; first funicular segment longest, 2.60 times as long as thick, about

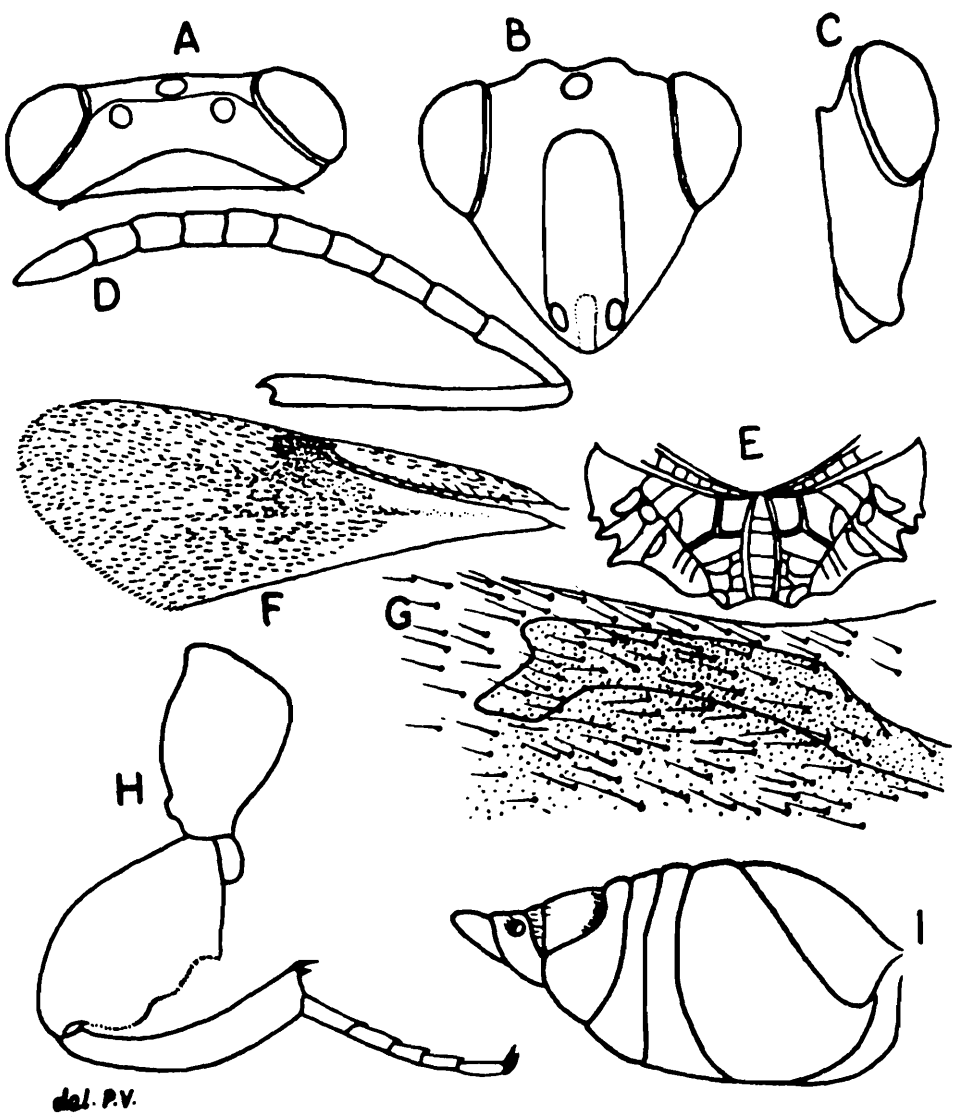

FIG. 63. *Oxycoryphys mysorensis* (Mani & Dubey), female : A. Head dorsal; B. Head front; C. Head profile; D. Antenna; E. Propodeum; F. Fore wing; G. Fore wing venation; H. Hind leg; I. Abdomen.

0.65 of pedicel; segments 2-5 subequal, 6-8 subequal; club solid, equal to the preceding 2 segments combined, almost 3 times as long as thick.

Pronotum almost 3.70 times as wide as long, about 0.20 of thorax, closely, umbilicately punctate, posterior margin with dense, close punctae, silvery-white pubescence very dense; mesonotum with umbilicate punctae, separated by about 0.50 of their own diameters; scapula shiny, smooth; scutellum bidentate, punctae slightly larger than on mesonotum; propodeal areola about 3 times as long as wide, laterally with 3 teeth; mesopleura with transverse fine striolations; fore wing length to width 100 : 36; veins *sm* : *m* : *st* : *pm* ratio 500 : 100 : 15 : 10; hind to fore wing 100 : 138; hind coxae about 1.60 times as long as thick; femora 1.35 times coxae, almost 2 times as long as wide, one acute tooth on basal 0.33, followed by 2 conspicuous bulges with fine comb on them; tibia curved, almost equal to femur, distinctly thicker apically, outer spur about 0.36 of metatarsus; tarsus about 0.82 of tibia, metatarsus about 0.25 of tarsus, second segment 0.70 of metatarsus, segments 2-4 almost equal, fifth slightly over preceding.

Abdomen about 0.50 of body, viewed from above moderately depressed dorsally, ovate, first tergite smooth and shiny, tergites 2 and 3 smooth in the middle, with setigerous punctae at side; viewed from side; length to width 100 : 50, first tergite to abdomen 40 100.

Type locality Vandalur (Madras)

Oxycoryphus indicus (Mani & Dubey)

(Fig. 62)

1974 *Dromochalcidia indica,* Mani & Dubey, *Mem. School Ent.,* 3 : 4.

Female Length 3.50 mm, range 3.00-4.00 mm. Body black, head black; antenna black except ferruginous-brown; pedicel, annellus and first 2 funicular segments, eyes and ocelli dark brown; wings hyaline, brown infumation surrounding vein *m* and apical 0.75; veins dark brown, fore and middle legs ferruginous-red, except black coxa; hind leg mostly black except trochanter, femoral tip, tibia apical 0.50 and tarsus ferruginous-brown; abdomen black, smooth and shiny.

Head viewed from above length to width 29 : 100; ocellocular space about 0.50 of ocellar diameter, interocellar space nearly 2.50 times ocellar diameter; vertex narrow, subacute, adruptly declivous behind to occiput, closely umbilicately punctate; head viewed from side length to width 100 58, gena to eye 50 : 100; closely umbilicately punctate, genal carina present; antenna inserted close to the mouth border, long, slender, slightly thicknened apically, almost 2.20 times the head height, segments 11 : 1 1 1 7 1; scape slender, about 0.34

of antenna, about 9 times as long as thick; pedicel about 0.22 of scape, 2 times as long as thick, annellus nearly 0.60 of pedicel, slightly longer than thick; first funicular segment longest, subequal to pedicel, segments 2-3 subequal, 4-5 subequal, sixth segment longer than the fifth and almost 0.80 times as long as thick, seventh segment 0.80 of the preceding; club about 2.90 times the preceding funicular segment and almost 2 times as long as thick.

Pronotum nearly 3.75 times as wide as long, about 0.20 of thorax, closely umbilicately punctate; mesonotum closely deeply umbilicately punctate, parapsidal furrows complete; scutellum punctate like mesonotum, as long as mesonotum, 2 times as long as wide, bidentate, teeth nearly 0.17 of scutellum; propodeum with one median carina and 4 lateral transverse carinae; fore wing length : width ratio 100 : 36; vein *sm : m : pm st* ratio 428 : 100 : 21 : 21; hind to fore wing 100 : 133; hind coxa about 1.80 times as long as thick, with one small tooth basal 0.25 and one stout tooth apical 0.20; femur almost 1.50 times coxa, 2 times as long as thick, umbilicately punctate, fine denticulation below, tibia curved, distinctly thicker apically, slightly shorter than femur; tarsus about 0.75 of tibia, tibial spur about 0.40 of metatarsus, metatarsus about 0.25 of tarsus, 2-3 subequal, fourth slightly shorter than third, fifth 1 70 times the preceding and subequal to metatarsus.

Abdomen about 0.40 of body, viewed from above smooth, shiny, oval, length : width 100 : 50, first tergite covers almost 0.82 of dorsum; viewed from side length to width 100 : 53, all tergites except first and second with long setigerous punctae.

Type locality : Nepal : Godavari

Distribution : India (Cardamom Hills)

Species Incertae Sedis

*Oxycoryphus pilosellus Cameron

1904 *Oxycoryphus pilosellus,* Cameron, *Entomologist,* 110.

1938 *Oxycoryphus pilosellus,* Mani, *Cat. Indian Ins.,* 23 : 52.

1960 *Lasiochalcidia pilosellus,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan* (C) 11 : 290.

Type locality India

Peltochalcidia Steffan

1948 *Peltochalcidia,* Steffan, *Bull. Soc. Ent. Fr.,* 53 : 121.

1951 *Peltochalcidia,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27(1) : 88.

Antennae inserted close to the base of the mandibles, with 11 segments; scape in female very long, slender, filiform, bare, with the segments slender and long; scape in male thick basally; mandible with 2-3 teeth on the right and 2 on the left; head viewed from the

* Some authors consider *Lasiochalcidia pilosella* (Cam.) as valid, and synonymise with it *Euchalcis trichocephala* Cam. and *E. myrmeleonae* Mani.

front trapezoid; pronotum without border of white setae; scutellum rounded behind; propodeum subhorizontal, with submedian, sublateral and lateral carinae, without teeth; posterolateral angles not produced behind; hind femora sparsely hairy, with basal tooth in the basal 0.33 and denticulation in 2 convex bulges; abdomen rounded; first tergite without keels basally; abdominal tip not pointed in female.

Type-species *Peltochalcidia benoisti* Steffan

Peltochalcidia indica Mani & Dubey

(Fig. 64)

1974 *Peltochalcidia indica,* Mani & Dubey, *Mem. School Ent.,* 3 : 17.

Female Length 3.00 mm. Body black; scape, pedicel and first funicular segment, tegulae, except coxae fore and mid legs and hind tarsi ferruginous-brown; rest of antenna brownish-black; eyes, ocelli dark ferruginous; hind tibia largely black, except narrowly below ferruginous-brown; wing hyaline; veins dark brown.

Head viewed from above as wide as thorax; vertex narrowed, subacute, sharply sloping behind to occiput; ocellocular space equal to ocellar diameter, interocellar space equal to 3 times ocellar diameters; front ocellus in front of the subacute vertex, ocellar area shiny, with a few scattered shallow punctae; occiput closely umbilicately punctate; head viewed in front length to width 100 : 110; inner orbital border parallel; closely, shallowly, umbilicately punctate; scrobe only slightly impressed, with obscure transverse striolations, clypeal projection covering labrum and mandible; head viewed from side height to thickness 100 : 50; gena subequal to eye; closely umbilicately punctate, genal carina absent; antenna inserted close to mouth border, very long, slender, nearly 3.25 times the head height; segments 11 : 1 1 1 7 1; scape slender, distinctly swollen basally and attenuated in the middle, reaching front ocellus, almost 0.33 of antenna; pedicel elongate-cylindrical, but distinctly thicker apically, about 0.37 of scape; annellus elongate, nearly 0.40 of pedicel, slightly shorter than first funicular segment; funicular segments 1-3 equal, 4-7 subequal; club slightly longer than the preceding 2 segments combined and gradually reduced apically.

Thorax shiny, sparsely and shallowly punctate; pronotum 3 times as wide as long; scutellum 1.50 times pronotum and equal to mesonotum, rounded and unarmed behind, with umbilicate punctae separated by their own diameter; mesonotum with punctae well separated, smaller and shallower and more widely spaced than on scutellum; propodeum subequal to scutellum, with paired longitudinal carina; mesopleura obscurely rugulose below; fore wing length : width 100 : 34; veins *sm* *m* ratio 500 : 100; *st* sessile, *pm* absent; *sm* with 10 stout spines; hind to fore wing 80 : 100; hind

* This species may have to be transferred to *Invreia* Masi.

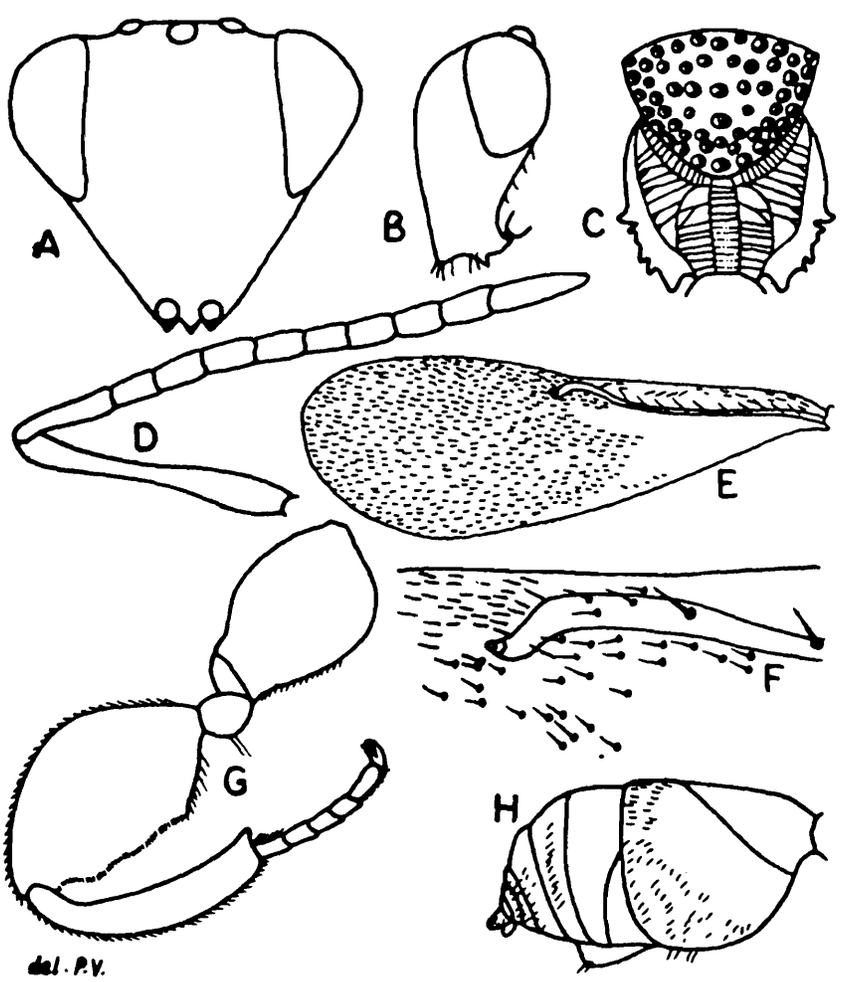

FIG. 64. *Peltochalcidia indica* Mani & Dubey, female : A. Head in front; B. Head in profile view; C. Scutellum with propodeum; D. Antenna; E. Fore wing; F. Fore wing venation; G. Hind leg; H. Abdomen.

coxa 2 times as long as thick; femora arched, smooth, very sparsely punctate and pubescent, almost 2 times as long as wide, with 37 denticulations, with an acute tooth at basal 0.30 and with one bulge at apical 0.30; tibia slightly shorter than femur, slender, stouter at apex, carina black; tarsus nearly 0.60 of tibia, spur nearly 0.50 of metatarsus; metatarsus 0.20 of tarsus, second segment subequal to metatarsus, third slightly shorter than the second, fourth 1.20 times the third, fifth 2 times the preceding.

Abdomen about 0.45 of body, viewed from above semi-oval, first tergite with fine punctae, separated by their own diameter; viewed from side width; length 53 : 100; second tergite large,

reaching approximately to the middle, posterior 0.50 with broad setigerous punctae.

Type locality Moozhiar-Tekkady Road (Cardamom Hills)

Distribution Southern Western Ghats

This species differs from its nearest ally *Peltochalcidia benoisti* Steffan in its smaller size; antenna 3.25 times the head length, scape strongly thickened at base; club a little over preceding 2 segments combined; femur as long as wide, femoral comb with 37 denticulations and *m* about 0.20 shorter than *sm.*

Euchalcidia Masi

1927 *Euchalcidia,* Masi, *Mem. Soc. Ent. Ital.,* 6 : 209, 221.
1929 *Euchalcidia,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 53 : 201.
1929 *Euchalcidia,* Masi, *Boll. Lab. Ent. Bologna,* 2 : 173.
1938 *Euchalcidia,* Mani, *Cat. Indian Ins.,* 23 : 60.
1951 *Euchalcidia,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (1) : 86.
1960 *Euchalcidia,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan* (C) 11 : 282.

Head viewed from the front subtriangular; vertex and temples developed; mandible tridentate on the right and bidentate on the left; scrobe extending above the middle of eyes; eyes glabrous or rarely very sparsely and finely hairy; clypeus strongly declivous below, not prominent; mandibles with 3 teeth on the right and 2 on the left; antennae inserted immediately above clypeus; in female long, slender, with 11 segments; club solid with indications of 3; pedicel long, annellus almost equal to segment 4; short in male; thorax not highly convex; hind margin of pronotum not fringed with dense setae; scutellum rounded apically; propodeum nearly horizontal, without large projections laterally behind, though with minute teeth; hind femora minutely punctate, below with 2-3 large projections and many teeth; abdomen nearly fusiform; first tergite tongue-shaped, rounded behind, punctate mid dorsally, longitudinally carinate basally; second tergite emarginate behind in the middle; epipygium short.

Type-species : Euchalcidia elongatula Masi

The species generally parasitize Noctuioidea, Tineidae, Tachinidae and Braconidae.

Euchalcidia crassicornis Masi

1929 *Euchalcidia crassicornis,* Masi, *Boll. Lab. Ent. Bologna,* 2 : 173.
1938 *Euchalcidia crassicornis,* Mani, *Cat. Indian Ins.,* 23 : 60.

Female Length 3.38 mm. Body black; head, thoracic dorsum shiny-aeneous; flagellum fuscous-brown; scape, pedicel, tegulae and fore legs yellowish-rufous, fore coxae black; middle coxae rufous; hind femora rufous basally and apically; tibiae outside black; fore wings pale yellowish-brown.

Head slightly wider than thorax; scrobes transversely strigulose; eyes almost glabrous, rarely sparsely pubescent apically on higher magnification; scape slender and partly thickened; flagellum not attenuate; pedicel about 0.35 of scape, sparsely clothed with white setae; funicular segments subequal; first funicular segment not quite 0.50 of pedicel; last funicular segment subquadrate; club elongate and equal to the 3 preceding segments combined.

Thorax about 0.63 times as wide as long; dorsum often not sculptured, but with setae; propodeum opaque, distinctly margined laterally, slightly concave; median longitudinal carinae well developed and sublateral carinae connected with the submedian carinae behind by a transverse carina, posterolateral tooth obtuse; metapleural fovea with conspicuous contiguous umbilicate punctae; mesopleura transversely striate; hind femora about 0.55 times as wide as long, with conspicuous posterior lobe, subapical lobe inconspicuous; outer surface reticulate; abdomen a little shorter than thorax; first tergite convex, about 0.56 of the dorsum, finely punctate marginally; second tergite about 0.12 of the first; tergite 3-6 with straight margins.

Male : Flagellum stout; hind femora fuscous-brown; first tergite with obscure sculpture.

Type locality : Katihar (Purnea Dist.); Bihar; Asansol (Bengal)

Distribution : Eastern India

Invreia Masi

1927 *Invreia,* Masi, *Mem. Soc. Ent. Ital.,* 61 : 211.
1951 *Invreia,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (1) : 50.

Antennae with 13 segments : 1.1.1 7.3; pedicel in female long; annellus as long as the first funicular segment; in male almost 0.50 of the first funicular segment; scape hardly reaching front ocellus, reduced in the apical 0.33, in male sometimes incised to form a tooth; antennae inserted in female close to the mouth, in male slightly higher; scrobe shallow; mandible tridentate on the right and bidentate on the left; sometimes right mandible with 4 teeth and the left with 3 teeth; genal carina present; eyes generally glabrous or finely hairy; head coarsely punctate; thorax coarsely but not closely punctate; propodeum often horizontal, with distinct median accessory, sublateral and lateral keels; scutellum flat, rounded or truncate behind; hind femora sparsely punctate, with indications of 3 teeth beneath, the first tooth small, acute and in the basal 0.33, the second tooth broadly rounded and the third a little larger; pectinate from the basal tooth onwards to the tip; fore wing with vein *m* very short; abdomen with the first tergite tongue-shaped, rounded behind, not elongate, without keels basally.

Type-species : Invreia subaenea Masi

Invreia ghanii Habu

1970 *Invreia ghanii,* Habu, *Mushi,* 43 (4) : 45.

Female Length 4.30-4.40 mm. Body generally black; wings hyaline; fore wings with brownish tinge near veins; fore and middle coxae black to reddish-black; hind coxae concolorous with thorax; fore and middle femora black to reddish-black, sometimes even dark brown or dark reddish-brown; hind femora generally black, but sometimes obscurely red near base; fore and middle tibiae red basally and apically and black in the middle or also wholly dark reddish-brown; hind tibiae black, with red tip; fore and middle tarsi yellow-brown; hind tarsi reddish-brown; abdomen black.

Head about 1 10 times wider than thorax, with close and indistinct shallow punctae; interocellar space about 3.50 times ocellar diameter; eyes sparsely hairy; scrobe not reaching front ocellus; mandible bidentate on the left; antennae slender; scape not reaching front ocellus, subequal to pedicel, annellus and the following 2.50 segments combined; pedicel 2.50 times as long as thick; funicular segments 1-6 subequal and about 1.50 times as long as thick, segment 7 a little shorter than the preceding; club obscurely biarticulate.

Thorax irregularly punctate; scutellum about 1.10 times as long as wide, faintly truncate apically; propodeum slightly declivous behind, submedian and sublateral areola complete; fore wings about 2.66 times as long as wide; vein *m* about 0.20 of *sm;* middle femora slightly dilated; tibiae not dilated; hind femora about 1.66 times as long as wide, sparsely, minutely clothed with setigerous punctae outside, with one distinct projection at basal 0.33 and with 2 lobes near the middle and 0.75; abdomen elongate-elliptic, widest about the middle and slightly shorter than the rest of body; first tergite less than 0.50 of dorsum, flat, shagreened.

Male : Length 4.30 mm. Body black; head as in female; antennae slender, scape shorter than in female, about as long as pedicel, annellus and 2.50 times the following segments combined; pedicel a little shorter than first funicular segment and about 1.50 times as long as thick; funicular segments 1-7 gradually becoming shorter; club slightly more than 2 times as long as the preceding segment; abdomen rounded behind, shorter than the rest of body.

Type locality : Pakistan

Distribution Pakistan

Host *Chilo partellus* Swinhoe

This species is separated from the related *Invreia rufitarsis* (Illiger) by the black hind femora and shagreened first abdominal tergite.

SUBFAMILY BRACHYMERIINAE

1904 *Chalcidini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 248.
1909 *Chalcidini,* Schmiedeknecht, *Gen. Ins.,* 97 : 18.
1951 *Brachymeriinae,* Boucek, *Acta Ent. Mus. Nat. Pragae.* 27 (1) : 17.

Head not produced into horns in front above; antennae inserted in the middle of frons, at least on or above the level of the lower orbital border, never close to the mouth; hind tibial spur single,hind tibiae apically sinuately obliquely truncate to produce an acute projection; abdomen sessile or nearly so.

KEY TO TRIBES

1. Frons not distinctly convex; occiput not deeply concave; frontogenal suture carinate; epipygium of abdomen not distinctly elongated behind	*Brachymeriini*
Frons swollen; occiput deeply excavated and concave; frontogenal carinae not present; epipygium of abdomen prolonged behind; ovipositor sheathed	*Phasgonophorini*

Tribe BRACHYMERIINI

1951 *Brachymeriini,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (1) : 17.

Head not deeply excavate behind, occiput not concave; frons not swollen and bulging in front; frontogenal carinae more or less distinctly developed; thorax distinctly convex; abdomen usually not produced behind; hind tibiae apically obliquely and spinously truncate, with a single spur; abdomen sessile.

Tribe PHASGONOPHORINI

1960 *Phasgonophorini,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan* (C) 11 : 213.

Head deeply excavate behind, occiput concave; frons swollen, bulging forward or convex; scrobe below far above the clypeal margin; frontogenal carinae absent; thorax not distinctly convex; abdomen distinctly produced behind.

KEY TO GENERA

1. Females	2
Males	15
2. Scutellum armed, emarginate or produced behind	3
Scutellum unarmed, though sometimes with a median depression and an elevated plate behind	7
3. Scutellum behind with a projection, raised emarginate or dentate plate	4
Scutellum with a short, stout projection behind	6

4.	Propodeum with 2 prominent teeth on each side behind; abdominal tergite 8 produced into a long style; antennae with 12 segments	*Megalocolus* Kirby
	Propodeum unarmed behind	5
5.	Hind femora with one long tooth, followed by 6-7 smaller teeth below; antennae with 11 segments	*Stypiura* Kirby
	Hind femora with only 6 large teeth below; antennae with 13 segments	*Epitelia* Kirby
6.	Propodeum with 2 teeth on each side behind; hind femora with 7-8 teeth below	*Pseudochalcis* Kirby
7.	Abdomen ending in a long ovipositor, as long as body	7a
	Abdomen not ending in a long ovipositor	8
7a.	Head with paired cornicles behind lateral ocelli	7b
	Head without cornicles	*Acanthochalcis* Cameron
7b.	Pronotal collar margined; scutellum armed	*Acanthochalcis* Cameron
	Pronotal collar not margined; scutellum not armed	*Macrochalcis* Masi
8.	Abdomen short, subglobose or ovate, never elongate; tergite 8 not elongated to a style; antennae with 13 segments	*Brachymeria* Westwood
	Abdomen much produced apically; tergite 8 long, compressed into a stylus	9
9.	Scutellum ending in a projection or emarginate plate	10
	Scutellum rounded behind, if sometimes with an emarginate plate then the plate is entire, not dentate	13
10.	Scutellum with an emarginate plate behind	11
	Scutellum with a projection behind	12
11.	Propodeum unarmed behind; hind femora with one long tooth, followed by 6 large teeth; antennae with 13 segments	*Epitelia* Kirby
	Propodeum bidentate behind on each side; tergite 8 produced behind into a stylus; antennae with 12 segments	*Megalocolus* Kirby
12.	Propodeum bidentate behind at the sides; hind femora with 7-8 teeth	*Pseudochalcis* Kirby
13.	Abdomen rounded basally	14
	Abdomen carinately truncated basally; antennae with 13 segments	*Phasgonophora* Westwood
14.	Abdomen with tergite 8 produced into a stylus; first tergite 0.33 of dorsum of abdomen; antennae with 11 segments, subclavate	*Trigonura* Sichel
	Abdomen with tergite 8 very long, sub-compressed, not triangular; first tergite variable, but about 0.50 of the dorsum of abdomen; antennae not subclavate, but filiform, with 11 segments	*Thaumatelia* Kirby
15.	Scutellum unarmed behind	16
	Scutellum produced, emarginate or armed behind	20

16. Abdomen rounded, not truncate basally — 17
    Abdomen carinately truncate basally; antennae with 13 segments — *Phasgonophora* Westwood
17. Propodeum rounded posterolaterally .. — 18
    Propodeum with prominent posterolateral angles, acutely pointed, usually clothed above with dense silvery-white hairs; thorax coarsely punctate; abdomen punctate; antennae filiform, with 11 segments — *Acanthochalcis* Cameron
18. Antennae with 13 segments, including one annellus; abdomen short, subglobose or ovate — *Brachymeria* Westwood
    Antennae with 11 segments, including one annellus — 19
19. Fore wing with vein *m* about 4 times *st;* antennae with 11 segments; hind femora with 6 moderate-sized teeth beneath — *Trigonura* Sichel
    Fore wing with vein *m* 4 times or more as long as *st;* hind femora with 8 teeth beneath; antennae with 11 segments, filiform, pedicel longer than scape — *Thaumatelia* Kirby
20. Scutellum with a short, stout projection behind; propodeum with 2 teeth on each side behind; hind femora with 7-8 teeth beneath — *Pseudochalcis* Kirby
    Scutellum ending in a raised emarginate or bidentate plate behind; propodeum unarmed at the sides behind — 21
21. Antennae with 11 segments — 22
    Antenae with 13 segments — 23
22. Hind femora armed with one large tooth, followed by 6-7 smaller teeth beneath — *Stypiura* Kirby
23. Hind femora with many teeth beneath — *Brachymeria* Westwood

Megalocolus Kirby

1862 *Halticella* (partim), Walker, *Trans. ent. Soc. London,* 1 : 357.
1883 *Megalocolus,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 54, 61.
1904 *Megalocolus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 249.
1909 *Megalocolus,* Schmiedeknecht, *Gen. Ins.,* 97 : 24.
1924 *Megalocolus,* Masi, *Ann. Mus. Civ. Stor. Nat.,* 10 : 182.
1938 *Megalocolus,* Mani, *Cat. Indian Ins.,* 23 : 52.

Antennae stout, inserted in the middle of face, with 12 segments, scape long, pedicel short, pyriform; first funicular segment short, others elongate, tip of scape, pedicel and first funicular segment naked, others finely hairy; head and thorax with coarse sculpture; parapsidal furrows indistinct; scutellum with the posterior margin bifid and raised up; propodeum densely pubescent, posterolaterally with a tooth on each side; hind coxa with a foliaceous process above; hind femora swollen and regularly dentate; first abdominal tergite equal to the rest, tip of abdomen conically produced and densely pubescent.

Type-species : Megalocolus ducator (Walker)

Megalocolus pruinosus Cameron

1906 *Megacolus pruinosus,* Cameron, *J. Bombay Nat. Hist. Soc.*, 17 : 93.
1938 *Megalocolus pruinosus,* Mani, *Cat. Indian Ins.*, 23 : 52.

Female Length 7.00 mm, terebra 2.00 mm. "Black, densely covered with silvery pile, the hind coxae and femora bright red; 4 anterior tarsi of a darker red; hinder tibiae darker red colour; wings hyaline, nervures black.

Head rugosely punctured, cheeks and temples densely, vertex more sparsely covered with long silvery hair; malar space almost as long as eyes; inner side bordered by a distinct keel; pro-mesothorax and scutellum strongly punctured, punctures distinctly separated; pleurae closely rugosely punctured, metanotum laterally bordered by a stout keel; lower spine obliquely turned upwards; upper shorter, bluntly rounded; central part stoutly irregularly reticulated, sides are more closely, irregularly, and less strongly reticulated; the apices of the abdominal segments are punctured, basal weakly, apical much more strongly and widely; basal part of ovipositor closely, weakly punctured; sides of the segments, except the basal, densely covered with silvery pubescence; legs densely covered with silvery pubescence; tarsal spines rufous; hind femora minutely closely serrate and densely pilose; antennae inserted opposite the lower part of the eyes; top of the antennal scape reaches to the ocelli; parapsidal furrows distinct."

Type locality Quetta

Stypiura Kirby

1834 *Chalcis* (partim), Perty, *Del. Anim. Art.*, 134.
1883 *Stypiura,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 59, pl. iii. fig. 28-30.
1904 *Stypiura,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 249, 250.
1909 *Stypiura,* Schmiedeknecht, *Gen. Ins.*, 97 : 23.
1935 *Stypiura,* Mani, *Rec. Indian Mus.*, 37 : 250.
1938 *Stypiura,* Mani, *Cat. Indian Ins.*, 23 : 52.

Antennae inserted on level of the middle of eyes, rather slender, finely hairy, with 11 segments; scape short; funicular segments uniformly thick; parapsidal furrows weak; scutellum behind with a bidentate process; propodeum with 2 teeth posterolaterally on each side; hind femora with one large tooth, followed by 6 smaller ones; abdomen conical, smooth, shiny, produced conically behind, the prolongation equal to rest of abdomen, hairy.

Type-species *Stypiura conigastra* (Perty)

***Stypiura variabilis** Mani

1935 *Stypiura variabilis,* Mani, *Rec. Indian Mus.*, 37 : 250.
1938 *Stypiura variabilis,* Mani, *Cat. Indian Ins.*, 23 : 52.

* This species may prove to be identical with *Brachymeria bengolensis* (Cam.)

Female : Length 4.00 mm. Body black; eyes dark brown; antennae black; tegulae brownish-red to pale yellow, with or without the upper margin darker; fore legs reddish-brown except for the femora black basally and tarsus yellowish-brown; hind coxa dark reddish-brown, dark brick-red or black; middle legs mostly reddish-brown, rarely yellowish-brown; hind femora brick-red, with or without a large or a small difuse semi-circular or irregular black spot touching the lower margin and extending to the middle and sometimes as large as the outer surface of the femur; femoral teeth moderately long; knee tipped yellowish-brown above a lttle from base; tarsi brown; wings hyaline; abdomen shiny black.

Head viewed from front triangular, heavily punctate, densely clothed with silvery-white hairs; eyes glabrous; lateral ocelli below the occipital ridge; scrobes deep; antennae inserted a little above level of lower orbital border; short, stout, densely shortly pubescent; with 11 segments; scape linear-fusiform, shiny; pedicel very short, wider than long; funicle with 7 segments; first funicular segment long, thicker apically than basally; second segment a little shorter; the succeeding segments becoming gradually thicker and shorter but mostly subequal; club biarticulate, about 2 times the preceding segment, truncate apically; hind femora finely punctate; second tergite large, glabrous, shiny; third tergite finely punctate; other tergites finely punctate behind; ovipositor short.

Type locality India : Assam (Sadiya)

Distribution : Assam, Calcutta, Madras, Travancore; Pakistan: Karachi

Host : Unknown

Temnata Cameron

1897 *Temnata,* Cameron *Mem. Proc. Manchester Lit. philos. Soc.,* 41 (4) : 42.
1938 *Temnata,* Mani, *Cat. Indian Ins.,* 23 : 53.

Type-species : Temnata maculipennis Cameron

Temnata maculipennis Cameron

1897 *Temnata maculipennis,* Cameron, *Mem. Proc. Manchester Lit. Philos. Soc.,* 41 (4) : 42.
1938 *Temnata maculipennis,* Mani, *Cat. Indian Ins.,* 23 : 53.

Type locality : Agra

***Meyeriella** Krausse

1916 *Meyeriella,* Krausse, *Archiv. Naturg.,* (A) 82 (1) : 93-95.
1938 *Meyeriella,* Mani, *Cat. Indian Ins.,* 23 : 146.

* This may prove to be synonym of *Brachymeria.*

Female Antennae with 11 segments (scape, pedicel, one annellus and 8 funicular segments); annellus very minute; scape, pedicel and annellus brown, rest of antenna black; scape below with long hairs; first funicular segment much shorter than scape; terminal antennal segment obliquely truncate; scape not reaching front ocelli, scrobe deeply excavate below.

This genus is separated from *Acanthochalcis* Cameron by 11 segmented antenna, scutellum without process; thorax and abdomen black, coarsely, deeply sculptured; first tergite about 0.50 of the rest of the abdominal tergites combined.

Type-species *Meyeriella indica* Krausse

Meyeriella indica Krausse

1916 *Meyeriella indica,* Krausse, *Archiv. Naturg.,* (A) 82 (1) : 93-95, fig. 1-5.
1938 *Meyeriella indica,* Mani, *Cat. Indian Ins.,* 23 : 146.
1940 *Meyeriella indica,* Pruthi & Mani, *ICAR Misc. Bull.* 30 : 4.

Female Length 6.50 mm. Body black with white hairs; scape, pedicel, annellus and tergites brown; legs reddish-brown, with dark brown-black spot on femora; hind trochanter black; hind femora with 7 teeth.

Type locality Trichinopoly

Host *Delias eucharis* Drury.

Epitelia Kirby

1883 *Epitelia*, Kirby, *J. Linn. Soc. London* (Zool.), 17 : 61.
1904 *Epitelia*, Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 249, 250.
1909 *Epitelia*, Schmiedeknecht, *Gen. Ins.,* 97 : 25.

This genus is very similar to *Brachymeria*, but the abdomen is conically produced behind, which part is as long as the rest of abdomen; funicular segments much longer than thick; antennae stout, with 13 segments, inserted close below the lower orbital border; scape apically and 2 following short segments glabrous, the remaining segments finely hairy; scutellum shortly bidentate apically; propodeum without lateral teeth; vein *m* long, *st* not so long; hind femora and tibia with numerous shallow punctae; femora below with numerous stout teeth; abdomen oval.

Type-species : Epitelia aculeata (Walker)

Epitelia mathuri Mani & Dubey

(Fig. 65)

1973 **Epitelia mathurai,* Mani & Dubey, *Mem. School Ent.,* 2 : 5.

Male Length 5.00 mm. Body black; ocelli and eyes brownish-black; fore leg with basal 0.50 of femur black, otherwise yellow; middle leg with basal 0.75 of femur black, otherwise yellow; tibia

* *mathurai* a misprint for mathuri. This species may have to be transferred to *Brachymeria.*

yellow, except at extreme tip of tibia; tarsi brown; hind coxa black, femur black, lower end spotted yellow; tibia yellow, except the extreme black tip yellow; tarsus brown; wings subhyaline, venation dark brown.

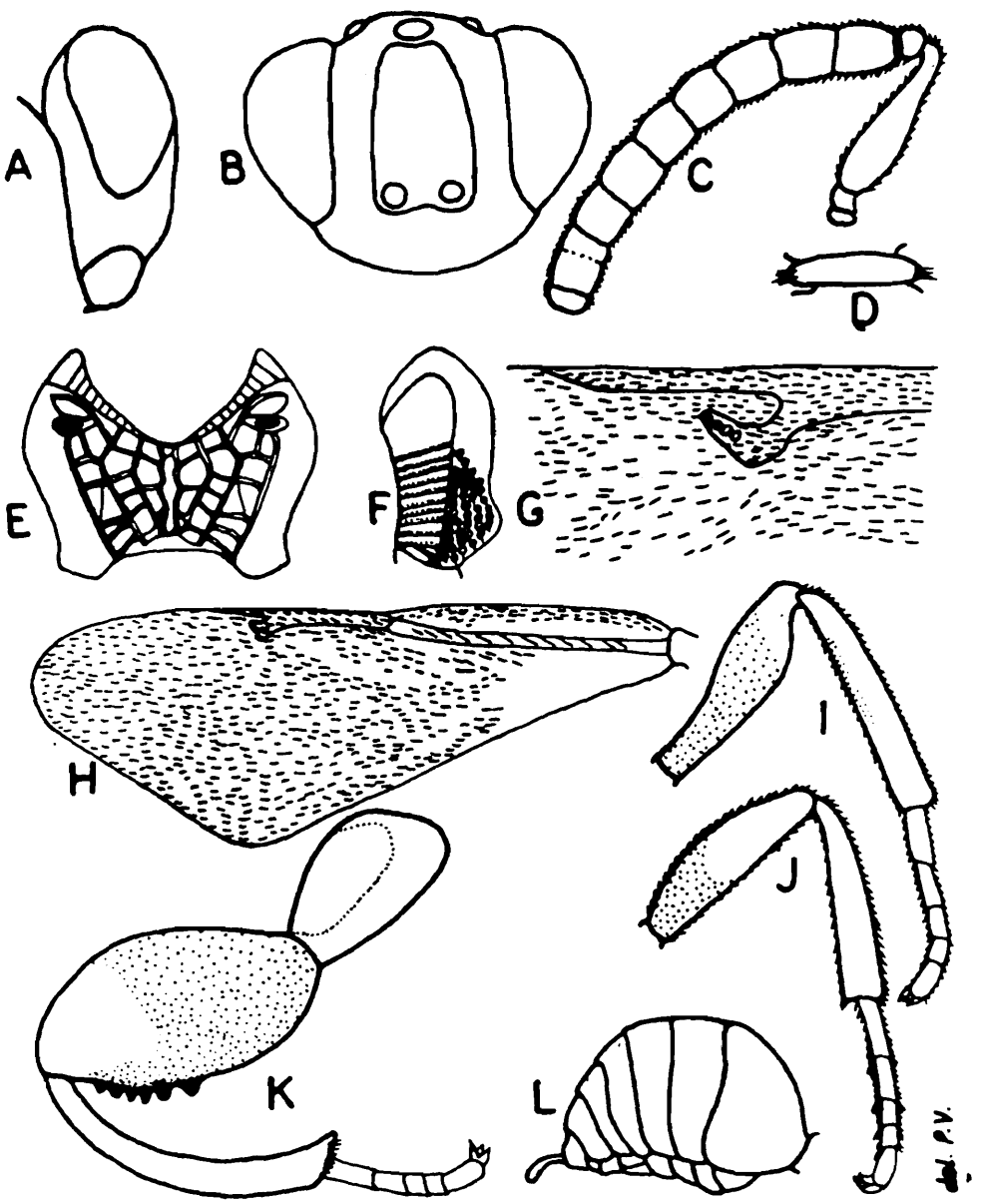

Fig. 65. *Epitelia mathuri* Mani & Dubey, male; A. Head in profile view; B. Head in front view; C. Antenna; D. Annellus; E. Propodeum; F. Mesopleura; G. Stigmal area; H. Fore wing; I. Middle leg; J. Fore leg; K. Hind leg; L. Abdomen in side view.

Head densely covered with long silvery-white setae; viewed from above length to width 34 : 100; thorax slightly less than head width; ocellocular space slightly less than ocellar diameter, interocellar space

about 4 times ocellocular space; front ocellar space about 1.50 times ocellocular space; vertex with very small, scattered punctae; viewed in front length to width 74 100; eyes a little diverging above; face with large, contiguous, deep, umbilicate punctae; scrobe with very faint, transverse striolations at upper 0.25, otherwise smooth; viewed from side length to width 100 : 46, gena 0.70 of eye; antennae inserted just on level of lower eye border, slightly narrowed apically, segments 13 : 1.1 1 7.3; scape 0.25 of antenna, 5 times as long as thick; pedicel subglobose; a little less than 0.50 of the first funicular segment; annellus about 5 times as wide as long; funicular segments 1,2 and 3 subequal, 4-6 subequal, 7 slightly shorter than preceding; club 1.60 times preceding segment; terminal segment short, transverse and truncated.

Pronotum transverse, about 3 times as wide as long, about 0.20 of thorax, with large, deep, contiguous, umbilicate punctae; parapsidal furrows complete, mesonotum with punctae small, shallow, separated by their own diameter; scutellum with very large, close, contiguous umbilicate punctae, posterior margin raised to a broad rounded plate; fore wing length : width 100 : 39; veins *sm* : *m pm* : ratio 220 : 100 : 56; *st* short; fore femur subfusiform, tibia slender but stouter apically, subequal to femur; tarsus slightly less than tibia; metatarsus longest, 0.33 of tarsus; second segment 0.70 of metatarsus; third 0.66 of the second; fourth 0.50 of the second; fifth about 2 times the fourth; middle femur clavate; tibia slender, slightly longer than femur; tarsus 0.80 of tibia; metatarsus 0.33 of tarsus; second segment 0.70 of metatarsus; third 0.80 of the second; fourth 0.70 of the third; fifth about 2 times the preceding; hind leg clothed with minute, fine pubescence; coxa 1.60 times as long as thick, very finely, minutely and shallowly punctate; femur 1 70 times coxa, 2 times as large as thick, with six long teeth; tibia subequal to femur, slightly stout towards apex; tarsus 0.50 of tibia; metatarsus longest, about 0.33 of tarsus; second segment 0.75 of metatarsus; third 0.70 of the second; fourth 0.50 of the second, fifth 3 times the fourth.

Abdomen umbilicately punctate, viewed from the side length to width 100 : 68; first tergite smooth, except for minute, shallow punctae in basal 0.50; second tergite with 4-5 rows of minute punctae along the anterior margin and side; remaining tergites with few punctae.

Type locality Punjab; Chichawatni.

Pseudochalcis Kirby

1862 *Halticella* (partim), Walker, *Trans. ent. Soc. London,* 1 : 360.
1883 *Pseudochalcis,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 54, 62.
1904 *Pseudochalcis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 249.
1909 *Pseudochalcis,* Schmiedeknecht, *Gen. Ins.,* 97 : 23.
1935 *Pseudochalcis,* Mani, *Rec. Indian Mus.,* 37 : 249.
1938 *Pseudochalcis,* Mani, *Cat. Indian Ins.,* 23 : 51.

Head, thorax and scutellum with very large punctae; scutellum flat with a short conical process apically; antenna inserted high in the middle of face, which is bulged forward to conceal the scape; scape stout; longer than the first funicular segment; propodeum posterolaterally each with 2 teeth; hind femur with 7-8 teeth; abdomen elliptic, not longer than thorax.

Type-species : Pseudochalcis declarator (Walker)

*Pseudochalcis indica Mani

1935 *Pseudochalcis indica,* Mani, *Rec. Indian Mus.*, 37 : 249.
1938 *Pseudochalcis indica,* Mani, *Cat. Indian Ins.*, 23 : 51.

Female : Length 5.00 mm. Body black; antenna black; tegulae yellowish-brown; fore femora black to dark reddish-brown basally and yellowish apically; rest of fore leg yellow; middle femora reddish-brown, knee yellow; tibiae brick-red; hind coxae black basally, brick-red beyond apically, hind femora purplish-brown, tip yellowish-brown; hind tibiae and tarsi yellowish-brown; second tergite dark reddish at the sides and black above, other tergites shiny black.

Head finely punctate, densely villous in front and back; eyes sparsely hairy; front ocellus at top of scrobe; funicular segments except the first, subequal; club biarticulate; thorax finely umbilicately punctate; scutellum punctate like mesonotum; hind coxae finely punctate beneath; hind femora very finely punctate, densely hairy, with rather long 10 teeth; abdomen short, finely punctate; ovipositor short.

Type locality India : Barkuda Islands (Chilka Lake)

Cerachalcis Masi

1944 *Cerachalcis,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 62 : 115.

First tergite in female large; tergite 2-4 concealed; ovipositor produced into elongate style; seventh tergite densely tomentose; head at vertex with 2 acute teeth, face convex; scrobe deep, acutely margined; antennae with 12 segments including one annellus; thorax umbilicately punctate; propodeum short, petiole transverse; fore wing with veins *m* and *st* short, *pm* long; hind femora stout, subelliptic, with 14-15 acute teeth.

Type-species : Cerachalcis fastuosa Ashmead

This genus resembles *Acanthochalcis,* but is separated by the 2 cornicles, behind near lateral ocelli, by the presence of short median punctation apically on scutellum and hind femora with 14-16 teeth.

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* This species may prove to be identical with *Brachymeria albicrus* Klug.

Cerachalcis birmana Masi

1944 *Cerachalcis birmana,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 62 : 135.

Female : Length 11.00 mm. Body black, partly dark reddish-brown or obscure red on pronotum, fore legs middle coxae, hind legs, first and second tergites at sides brown; hind coxae rufescent, hind femora externally black, petiole black; fore wing yellowish-brown with a brown band from vein *st;* body clothed with silvery-white setae. Interocellar cornicles obtuse, interocellar space equal to ocellar diameter, front ocellar space more than ocellar diameter, vein *pm* very long; hind coxae shiny above; hind femora almond-shaped, width about 0.55 of length and externally shiny and finely punctate, below with 16 teeth of which 1-10 are subequal and triangular; the remaining 6 minute; abdomen to thorax ratio 200 : 110; ovipositor a little longer than abdomen; first tergite with contiguous punctate.

Type locality : Burma : Minhla

Distribution : Burma

Host Unknown

Macrochalcis Masi

1944 *Macrochalcis,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 62 : 136.

This genus is separated from *Cerachalcis* as follows : prothoracic collar not margined; median dorsal part of pronotum declivous; scutellum unarmed; hind coxae elongate; femora not very stout, a little longer than thick, without internal teeth; basal abdominal tergites slightly depressed in front; ovipositor long.

Type-species : Macrochalcis bischoffi Masi

Macrochalcis bischoffi Masi

1944 *Macrochalcis bischoffi,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 62 : 137.

Female : Length 10.00 mm. Body black, with white hairs; tegula, legs including hind coxae, abdomen in part brown; antennae fuscous, wings yellowish-brown, scrobe straight; first funicular segment 1.50 times as long as thick, following segments subequal; terminal segment a little longer than the penultimate; pronotum closely umbilicately punctate; scutellum marginally with rectangular foveae; propodeum with areola with longitudinal keel sinuate; fore wing with veins *m* : *pm* : *st* ratio 100 : 173 : 33; hind femora with first anterior teeth robust, external surface sparsely minutely punctate; tibiae carinae apically; first tergite occupying 0.60 of the dorsum; terminal and penultimate tergites punctulate-tomentose.

Type locality Burma

Distribution : Burma

Host : Unknown

Macrochalcis seccundaria Masi

1944 *Macrochalcis seccundaria,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 62 : 139.

This species is similar to *birmana* but smaller.

Female : Length 6.50 mm. Body black; abdomen at basal 0.33 rufous; antennae fuscous; legs fuscous-brown, wing pale yellow; antennae with segments subequal, except the terminal segment, which is a little shorter than the preceding; thorax umbilicately punctate in front and less distinctly behind; veins *m* : *pm* : *st* ratio 100 : 170 : 34; hind femora nearly as long as wide, shiny; first abdominal tergite sparsely punctate; second tergite more conspicuously punctate; ovipositor 0.90 of abdomen.

Type locality : Burma
Distribution Burma
Host : Unknown

Brachymeria Westwood

1767 *Chalcis* (partim), Linnaeus, *Syst. Nat.,* (12) 1 (2) : 952.
1787 *Chalcis* (partim), Fabricius, *Mantiss. Ins.,* 1 : 272.
1829 *Brachymeria,* Stephens, *Syst. Cat. Brit. Ins.,* 1 : 393.
1832 *Brachymeria,* Westwood, *Phil. Mag.,* (3) : 1, 127.
1834 *Chalcis,* Walker *Ent. Mag.,* 2 : 27.
1872 *Chalcis,* Cresson, *Trans. Amer. ent. Soc.,* 4 : 59.
1898 *Chalcis,* Dalla Torre, *Cat. Hym.,* 5 : 385.
1904 *Chalcis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 249, 250.
1904 *Oncochalcis,* Cameron, *Entomologist,* 37 : 161.
1909 *Chalcis,* Schmiedeknecht, *Gen. Ins.,* 97 : 19, 20 25.
1911 *Tumidicoxa,* Girault, *Zool. Jahrb. (Syst.)* 31 : 378.
1911 *Ceyxia,* Girault, *Zool. Jahrb. (Syst.)* 31 : 382.
1913 *Pseudepitelia,* Girault, *Canadian Ent.,* 45 : 104.
1913 *Brachepitelia,* Girault, *Canadian Ent.,* 45 : 106.
1913 *Tumidicoxella,* Girault, *Trans. R. Soc. S. Australia,* (A) 79 (6) : 67.
1913 *Tumidicoxoides,* Girault, *Arch. Naturg.,* (A) 79 (6) : 67.
1913 *Chalcis,* Crawford, *Bull. US Dept. Agric. Bur. Ent.,* 19 (2) : 30.
1922 *Chalcis,* Ruschka, *Konowia,* 1 : 221.
1923 *Brachymeria,* Waterston, *Bull. ent. Res.,* 14 : 103.
1929 *Brachymeria,* Masi, *Boll. Soc. Ent. Ital.,* 8 : 114.
1936 *Brachymeria,* Burks, *Trans. Illinois Acad. Sci.,* 29 : 251.
1938 *Brachymeria,* Mani, *Cat. Indian Ins.,* 23 : 49.
1938 *Oncochalcis,* Mani, *Cat. Indian Ins.,* 23 : 49.
1946 *Brachymeria,* Ghesquiere, *Rev. Zool. et. Bot. Africaines,* 39 : 372.
1950 *Brachymeria,* Masi, *Eos.,* 27.
1951 *Brachymeria,* Peck in Muesebeck *et al., US Dept. Agric. Mon.,* 2 : 421.
1951 *Brachymeria,* Boucek, *Acta Ent. Mus. Nat. Pragae,* (Suppl.) : 17.
1960 *Brachymeria,* Burks, *Trans. Amer. ent. Soc.,* 86 : 225.
1960 *Brachymeria,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan,* (C) 11 : 142.
1962 *Brachymeria,* Habu, *Fauna Japonica,* 12-65.
1973 *Brachymeria,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 5.
1979 *Brachymeria,* Krombein *et al.,* Hymen. N. America, 1 : 870.

Head viewed from the side ovate, with large eyes; viewed from front with deep, carinate-margined scrobes and generally flat frons, not rounded; occiput not carinate; genal carina well developed, often pre-orbital and postorbital carinae also present; mandibles bidendate on left and biarticulate on the right side; antennae short, inserted on or a little above the lower orbital border, with 13 segments : scape and pedicel short and annellus narrow; club biarticulate but appearing as 3-segmented; body generally punctate; scutellar apex rounded or emarginate; fore wing hyaline or faintly smoky with vein *pm* about 0.50 of *m* and generally about 2 times *st*; hind coxa often with an inner tooth in female; hind femur stout, with the outer lower margin bearing a row of teeth (5-16) and often also an inner femoral tooth; hind tibia arcuate; abdomen sessile, subglobose or ovate, with 7 tergites; scutellum ending behind in a raised emarginate or bidentate plate; propodeum unarmed; first tergite longest and occupying about 0.33-0.50 of the dorsum; tergite 6 with spiracles; eighth tergite never very long; ovipositor compressed.

Type-species *Brachymeria minuta* (Linnaeus)

Brachymeria subgenus **Neobrachymeria** Masi

1929 *Neobrachymeria,* Masi, *Ann. Mus. Stor. Nat. Genova,* 53 : 196-198.
1960 *Neobrachymeria,* Habu, *Kontyu,* 34 (1) : 23-28.
1960 *Neobrachymeria,* Burks, *Trans. Amer. ent. Soc.,* 86 : 229.
1973 *Neobrachymeria,* Joseph *et al., Calicut Univ. Zool. Mon.* 1 : 193.

Abdomen well prolonged in female, usually strongly acuminate at apex; first tergite proportionately short; epipygium fairly long; ovipositor sheath well projecting. In the male the length of abdomen is normal and it is difficult to distinguish from *Brachymeria, sens. str.*

Type-species *Brachymeria (Neobrachymeria) confalonierii* Masi from Giarabus (Cyrenaica), Libya (Monotypic and Original Designation).

Brachymeria subgenus **Matsumurameria** Habu

1960 *Matsumurameria,* Habu, *Bull. Nat. Inst. Agric. Sci.,* (C) 11 : 209-213.
1960 *Matsumurameria,* Burks, *Trans. Americ. Ent. Soc.,* 86 : 228.
1973 *Matsumurameria,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 181.

Clypeus partly or completely fused with the face, densely pubescent on postclypeus; hind coxa with a trichoid zone on inner ventral side; punctae on thorax distinctly wider than their diameter

Subgenotype *Brachymeria taiwanus* (Matsumura)

These subgenera are not adopted in the following pages.

KEY TO SPECIES

1. Clypeus fused with frons	2
Clypeus not fused with frons	3
2. Clypeus fused with frons above only in the middle; postorbital carina present; pre-orbital carina absent	*Brachymeria taiwana* (Mats.)
Pre-orbital and postorbital carinae absent	*Brachymeria criculae* Kohl
3. Abdomen in female elongate, often acuminate apically	4
Abdomen in female generally short, never acuminate, generally truncate or nearly so apically	5
4. Postorbital carina present	*B. nosatoi* Habu
Postorbital carina absent	*B. ghani* Joseph *et al.*
5. Hind coxa in female dentate below or at least with a tooth-like protuberance	6
Hind coxa in female and male not dentate below	12
6. Scutellum emarginate behind	7
Scutellum not emarginate	8
7. Hind femora generally reddish-brown, with the tip yellow; hind tibiae yellow, with dark red at base and along ventral carina	*B. bengalensis pulchellae* Joseph *et al.*
Hind femora and tibiae brownish-black, with tips faintly yellow	*B. dunensis* Joseph *et al.*
8. Postorbital carina reaching genotemporal margin	9
Postorbital carina not reaching genotemporal margin	11
9. Hind tibia black	*B. coxodentata* Joseph *et al.*
Hind tibia largely yellow	10
10. Lateral carina of scrobe continued below; first abdominal tergite not shagreened	*B. lasus* (Walk.)
Lateral carina of scrobe not produced below; first abdominal tergite shagreened	*B. albotibialis* (Ashm.)
11. Hind tibia largely yellow; abdomen longer than rest of body in female; thorax with interspace between punctae smooth	*B. intermedia* (Nees)
Hind tibia brownish-black, yellow subbasally and apically; abdomen shorter than rest of body in female; interspace between punctae on thorax rugose	*B. intermedia porthetrialis* Joseph *et al.*
12. Scutellum only slightly emarginate, but rounded apically	13
Scutellum strongly emarginate	37
13. Scutellar punctae separated from each other by about 0.50 of their diameter	14
Scutellar punctae widely separated	35
14. Pre-orbital carina present	15
Pre-orbital carina absent or at the most faint	26

15.	Postorbital carina present	16
	Postorbital carina absent or faint	23
16.	Hind tibia brownish-black or black basally	17
	Hind tibia not black	20
17.	Hind tibia with yellow subbasally	18
	Hind tibia not yellow subbasally	19
19.	Scutellum entire apically; scrobe not separated by a rugose space from front ocellus	*B. nephantidis* Gahan
19.	Scrobe reaching front ocellus; hind femur black, without yellow apically; postorbital carina not branched	*B. menoni* Joseph *et al.*
	Scrobe not reaching front ocellus; hind tibia with yellow tip	*B. raoi* Joseph *et al.*
20.	Hind tibia largely yellow, without black medially, narrowly black along ventral carina; hind femora black in the basal 0.75 and yellow in the apical 0.25	*B. koduvalliensis* Joseph *et al.*
	Hind tibia with brownish-black or black medially	21
21.	Scrobe reaching front ocellus	22
	Scrobe not reaching front ocellus	*B. wiebesina* Joseph *et al.*
22.	Terminal hind tarsal segment about 2 times as long as thick; hind tibia yellow basally, brownish-yellow apically	*B. hime* Habu
	Terminal hind tarsal segment at least 3 times as long as thick; hind tibia yellow apically	*B. hime attevae* Joseph *et al.*
23.	Hind tibia dark brown or black basally	24
	Hind tibia yellow or red basally	25
24.	Small sized species, with the body not exceeding 2.00 mm in length	*B. excarinata plutellae* Joseph *et al.*
	Large sized species, with the body at least 4.00 mm long	*B. excarinata* Gahan
25.	Hind tibia yellow in the basal and apical 0.33 and reddish-black in the middle	*B. shansiensis* Habu
	Hind tibia wholly yellow, without black in the middle	*B. carinata* Joseph *et al.*
26.	Postorbital carina present	27
	Postorbital carina faint or absent	31
27.	Hind tibia yellow basally and apically; black in the middle	*B. secundaria* (Ruschka)
	Hind tibia black or brown	28
28.	Hind tibia black basally alone, but otherwise yellow	*B. euploeae* Westwood
	Hind tibia mainly black or brownish-black,	29
29.	Hind tibia largely brownish-black, yellow at tip only	*B. hearseyi* (Kirby)
	Hind tibia yellow basally and apically	30
30.	Hind tibia mostly black, dark yellow subbasally and apically	*B. punctifronta* Joseph *et al.*
31.	Hind tibia with a black or brown band in the middle	32
	Hind tibia without such a band	33

32. Hind tibia blackish-brown, yellow subbasally and apically — *B. burksi* Chhotani
33. Abdomen black, rarely faintly red — 34
    Abdomen red — *B. semirufa* (Walker)
34. Vertex punctate; face below scrobe smooth in the middle — *B. margaroniae* Joseph *et al.*
    Vertex only obscurely punctate; face below scrobe punctate — *B. jayaraji* Joseph *et al.*
35. Pre-orbital carina present — *B. tachardiae* (Cameron)
    Pre-orbital carina absent — 36
36. Hind tibia mostly black — *B. medicina* Joseph *et al.*
    Hind tibia brownish-black basally, otherwise yellow — *B. nursei* (Cameron)
37. Scutellar punctae close together — 38
    Scutellar punctae well separated — 52
38. Pre-orbital and postorbital carinae present — 47
    Pre-orbital carina faint; postorbital carina may be present or also absent — 39
39. Postorbital carina present — 40
    Postorbital carina absent — *B. amphissa* (Walker)
40. Hind femora yellow basally and apically — 41
    Hind femora not yellow basally and apically — 43
41. Hind femora generally black in the middle — *B. flavipes* (Panzer)
    Hind femora yellow in the middle — 42
42. Hind femora largely yellow, except for a narrow median black band — *B. ornatipes* (Cameron)
    Hind femora with a large black median patch — *B. megaspila* (Cameron)
43. Abdomen orange-yellow — *B. croceogastralis* Joseph *et al.*
    Abdomen black, only rarely faint red — 44
44. Hind femora black or reddish-black, with an apical yellow or white spot — 45
    Hind femora red, brown, with or without apical spot — 46
45. Postorbital carina branched; scape without yellow; hind tibia black or brown, with yellow subbasally and apically — *B. hattoriae shillongensis* Joseph *et al.*
    Postorbital carina not branched; scape yellow basally — *B. hattoriae* Habu
46. Hind femora red or brown, with or without a yellow spot apically; hind tibia yellow spot apically; hind tibia yellow, basally with brown or black — *B. bengalensis* Cameron
    Hind femora red, without yellow spot apically; hind tibia black, only obscurely red basally ... — *B. alternipes* Walker
47. Hind femora black or brown, apical brown spot present or absent — 48
    Hind femora black or red, with apical yellow spot — 49

48. Hind tibia black; scutellum with a median longtudinal carina	*B. lugubris* Walker
Hind tibia ferruginous, with the apical 0.25 pale yellow	*B. atridens* Waterston
49. Hind tibia black or brown basally, yellow or white subbasally and apically	51
Hind tibia yellow or brownish-yellow basally	50
50. Hind tibia yellow; scutellum with a median longitudinal carina	*B. scutellocarinata* Joseph *et al.*
Hind tibia yellow or brown basally and apically, black or dark red in the middle; scutellum with a median longitudinal smooth path	*B. fiskei* Crawf.
51. Hind femora narrow, more than or at least 1.80-2.00 times as long as wide, with apical patch; hind tibia red, with subbasal and apical patches	*B. podagrica* (Fabr.)
Hind femora not more than 1.80 times as long as wide, mostly black, apical yellow; hind tibia mostly black	*B. minuta* (Linnaeus)
52. Pre-orbital carina present	53
Pre-orbital carina absent; postorbital carina present; hind femora black with rufo-fulvous apically; hind tibia with subbasal and apical yellow spot	*B. fulvitarsis* (Cameron)
53. Hind femora variable red, yellow apically; scutellar punctae separated by more than their own diameter	*B. podagrica* (Fabr.)
Hind femora basally black, apical 0.50 yellow; scutellar punctae separated by at least 0.50 of their diameter	*B. minuta calopeplae* Joseph *et al.*

Brachymeria taiwana (Matsumura)

1910 *Chalcis taiwanus,* Matsumura, *Schädlichen und nützlichen Insekten vom Zuckerrohr Formossas,* 26, 85, pl. 30, fig 2.

1911 *Chalcis taiwanus,* Matsumura, *Mem. Soc. Ent. Belg.,* 18 : 149.

1943 *Brachymeria euploeae* (partim), Sonan (nec. Westwood) *Rep. Gov. Formosa, Agr. Exp. Sta.,* 84 : 79-83.

1960 *Brachymeria (Matsumurameria) taiwana,* Habu, *Bull. nat. Inst. Agr. Sci.,* (C) 11 : 209-213.

1970 *Brachymeria clypealis,* Joseph *et al., Agric. Res. J. Kerala,* 8 (1) : 25-28.

1971 *Brachymeria flagellata,* Joseph *et al., Oriental Ins.,* 5 (2) : 234-236.

1973 *Brachymeria (Matsumurameria) taiwana,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 181.

Female Length 4.50 mm. Body black; coxal tip somewhat brown; fore and middle trochanters deep reddish-brown; fore femora yellow in apical 0.50; middle femora faintly reddish-brown at base, yellow apically; hind femora with rather large yellow ring at tip; fore and middle tibiae yellow, slightly brown in inner median part; hind tibia yellow with the base black or brownish-black.

Head slightly wider than thorax, largely obscurely punctate; interocellar space 2.20 times ocellar diameter; pre-orbital carinae vestigial; scrobe moderately deep, smooth, reaching front ocellus; malar space slightly more than 0.33 of eyes; postorbital carina reaching posterior margin of genotemporal region; scape not exceeding front ocellus, equal to segments 4-7 combined; pedicel almost as long as thick; first funicular segment a little longer than thick; segment 2 as long as thick, slightly thicker but shorter than segment one; segment 3 slightly thicker but as long as segment 2; segments 4-7 almost as thick as segment 3, slightly decreasing in length; club 2 times preceding segment.

Thorax obscurely punctate; punctae small; posteriorly on scutum and scutellum somewhat deep; interspace somewhat striate on pronotum and on posterior part of scutum, relatively wide on other parts, fairly reticulate or striate on scutum; scutum 1.60 times as wide as long; fore wing 2.50 times as long as wide; veins *sm m pm st* ratio 195 : 100 : 33 : 16; hind coxae finely, densely punctate without protuberance at inner ventral side; hind femora more than 1.50 times as long as wide, with minute punctae, but without reticulation on outer side, with punctae and setae somewhat less dense on inner side; inner ventral side without protuberance near base; outer ventral margin with about 15 small teeth.

Abdomen equal to thorax, widest slightly before middle, as wide as thorax; first tergite smooth; second tergite closely punctate at the sides, in the middle almost smooth though with a few faint punctae basally; sixth tergite coarsely punctate; ovipositor not exserted.

Type locality Formosa

Distribution Taiwan (Formosa), India, Indo-China, Java

Brachymeria criculae (Kohl)

(Figs. 66 & 67)

1889 *Chalcis criculae*, Kohl, *Indian Mus. Notes*, 1 : 80.
1904 *Chalcis argentifrons*, Ashmead, *J. N.Y. ent. Soc.*, 12 : 136.
1909 *Chalcis criculae*, Schmiedeknecht, *Gen. Ins.*, 97 : 26.
1919 *Chalcis argentifrons*, Gahan, *Proc. U.S. Nat. Mus.*, 56 : 518.
1927 *Chalcis argentifrons*, Ramakr., *Bull. ent. Res.*, 18 : 77.
1973 *Brachymeria (Matsumurameria) criculae*, Joseph *et al.*, *Calicut Univ. Zool. Mon.*, 1 : 184.

Female : Length 3.50-3.60 mm. Head and thorax black; abdomen brownish-red; tegulae yellow; coxae and trochanters reddish-brown; fore and middle femora reddish-brown, except yellow tips tibiae and tarsi yellow; hind femora orange-red with yellow tips; tibiae yellow with base red extending apically on the ventral margin with a light extension in the middle dorsally; tarsi yellow.

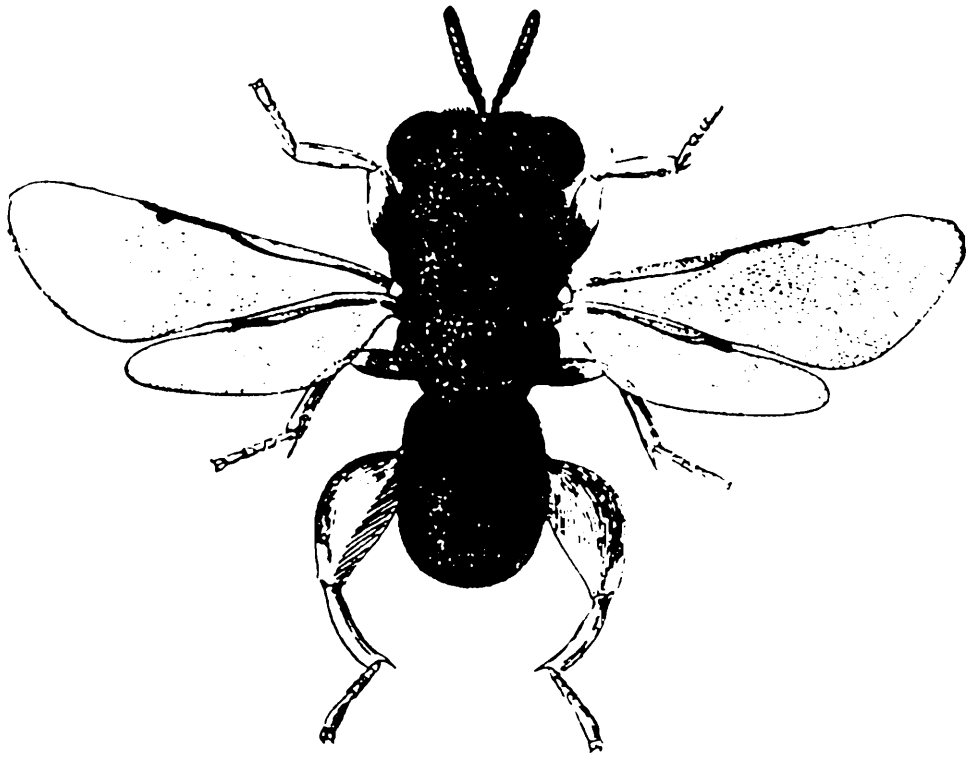

FIG. 66. *Brachymeria circulae* (Kohl), male.

Head somewhat narrower than thorax, a little more than 1.33 its length; shallowly punctate, interspace rugose; scrobe deep, smooth, shiny, reaching front ocellus; front ocellar space a little more than 0.30 of interocellar space, which latter is a little less than 4 times the ocellocular; postclypeus indistinct, only smooth anteclypeus visible; labrum about 2 times as wide as long; pre-orbital and postorbital carinae absent; malar space subequal to eye; front genal angle almost rectangular; hind genal angle almost rectangular and rounded; antennae not stout; scape not exceeding front ocellus, a little longer than segments 4-6 combined; pedicel almost as long as thick; annellus more than 3 times as wide as long; first funicular segment a little wider than long; segment 2 and 3 subequal to segment 1; segment 4 a little shorter than segment 3, subequal to segment 5; thickness of flagellar segments increasing gradually from segments 1-7; club a little less than 2 times the preceding segment.

Thorax with small punctae; somewhat deep posteriorly on scutum and scutellum, faint on scapulae and axillae; interspace somewhat narrow on pronotum and anteriorly on mesoscutum, not striate and relatively wide apart in other parts; scutum 1 75 times as wide as long; scutellum wider than long; fore wing a little less than 2.50 times as long as wide; veins *sm : m : pm : st* ratio 200 : 100 : 33 : 75; hind coxae punctate ventrally, smooth and shiny dorsally; hind femora about 1.50 times as long as wide, with minute punctae, without protuberance, with a row of 11 teeth.

Abdomen subglobose, equal to thorax; first and second tergites with fine microsculpture, latter with a row of slightly larger punctae at base; sixth tergite with about 6 transverse rows of punctae; ovipositor exserted.

Type locality : Philippines

Distribution : Philippines; India : Coimbatore

Host : Lasiocampid pupa (Lasiocampidae); wild silkworm *Cricula* sp. (Saturniidae)

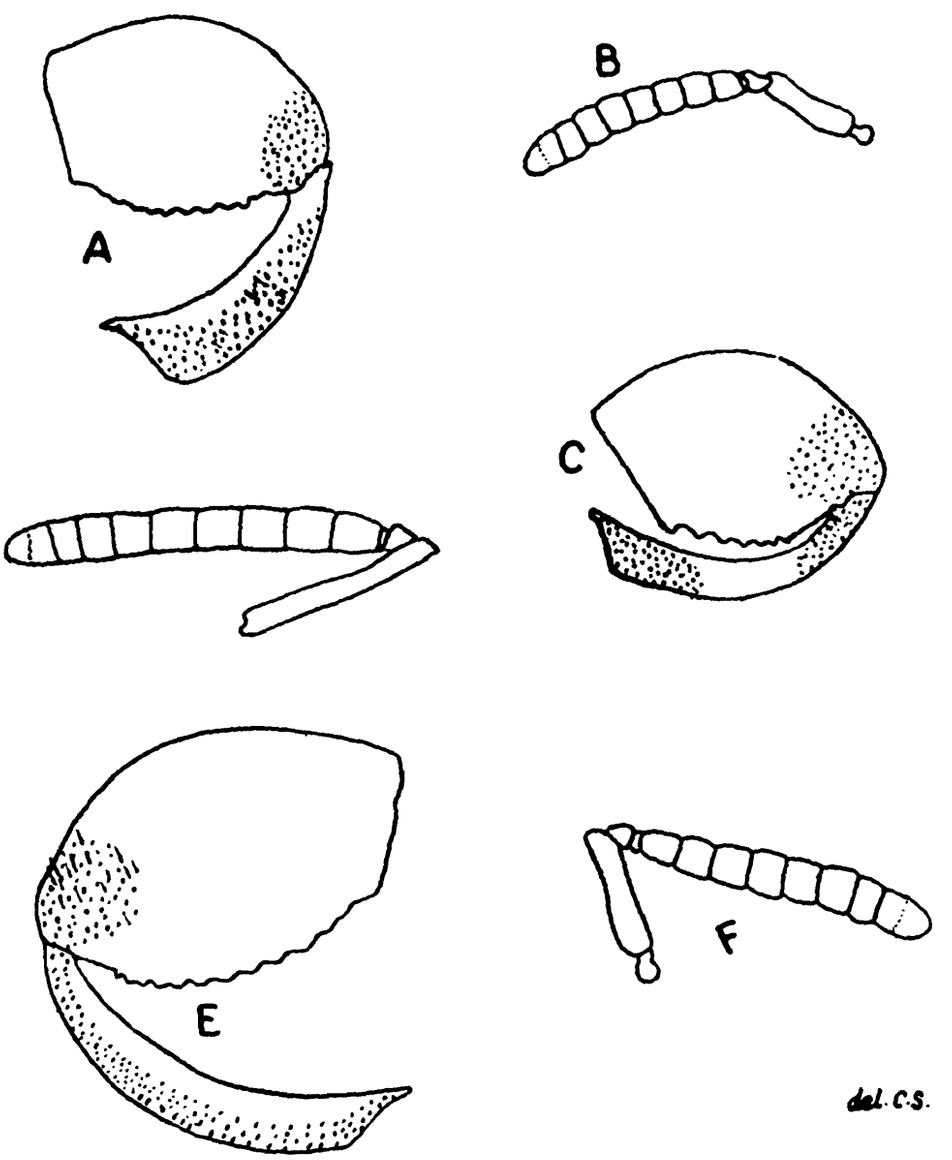

FIG. 67. A-B. *Brachymeria circulae* (Kohl), female : A. Hind femur and tibia; B. Antenna; C-D. *Brachymeria nosatoi* Habu, female : C. Hind femur and tibia; D. Antenna; E-F. *Brachymeria ghani* Joseph *et al.*, female : E. Hind femur and tibia; F. Antenna.

Brachymeria nosatoi Habu

(Fig. 67)

1960 *Brachymeria (Neobrachymeria) nosatoi,* Burks, *Trans. Amer. ent. Soc.,* 86 : 229.
1966 *Brachymeria (Neobrachymeria) nosatoi,* Habu, *Kontyu,* 34 (1) : 23-28.
1973 *Brachymeria (Neobrachymeria) nosatoi,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 193.

Female Length 5.25-6.00 mm. Body black; tegulae pale yellow, basally narrowly black; fore femora yellow in apical 0.50; middle femora yellow apically; hind femora black, with relatively large yellow in apical 0.30; fore and middle tibiae yellow basally and apically; hind tibiae yellow in basal and apical 0.33; tarsi yellowish-white, faintly brown.

Head slightly wider than thorax, with shallow punctae; inter-ocellar space 2.25 times ocellar diameter; pre-orbital carinae present; scrobe reaching front ocellus; malar space 0.33 of eye; antennae not strongly stout; scape fully reaching front ocellus, a little longer than segment 4, a little longer than thick, slightly longer but as thick as segment 5; segment 7 as long as thick, slightly shorter than segment 5; segment tenth 1.33 times as thick as long; club 2 times the tenth segment.

Thorax shallowly, closely punctate; scutellum posteriorly bilobed, fore wing 2.60 times as long as wide; veins *sm m pm st* ratio 205 : 100 :33 : 16; hind coxae closely punctate, without protuberance; hind femore 1.60 times as long as wide, closely finely punctate, faintly striate, matt, without protuberance near base, with 11-13 small teeth.

Abdomen 1.50 times thorax, widest at or behind basal 0.25; first tergite covering 0.25 of dorsum, smooth; second tergite very finely punctate; sixth tergite sparsely, obscurely punctate.

Male Length 3.50-4.25 mm. Scape a little shorter than in female, barely reaching front ocellus, also a little shorter than segment 4-7 combined; scutellum not bilobed; abdomen a little shorter than thorax.

Type locality Japan

Distribution Indo-China, Japan, Philippines, India

Host *Nephantis serinopa* M., *Dioryctria splendidella* H-S., *Evertia cristata* W

Brachymeria ghani Joseph, Narendran & Joy

(Fig. 67)

1973 *Brachymeria (Neobrachymeria) ghani,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 196.

Female Length 4.00-4.25 mm. Body black; tegulae, tibiae yellow; fore femora blackish-brown, with the distal 0.33 yellow; tarsi

pale yellow with distal end brownish-black; middle femora blackish-brown, with the distal 0.25 yellow; tarsi pale yellow with distal end brownish-black; hind femoral tip yellow; tibiae yellow except the black ventral carina; tarsi pale yellow with tip brownish-black.

Head a little wider than thorax, 1.25 times as wide as long, shallowly, umbilicately punctate, interspace rugose; scrobe smooth, shiny, a little more than 1.50 times as long as wide, reaching front ocellus; front ocellar space 0.40 of interocellar space; clypeus slightly more than 4 times as wide as long; labrum 2 times as wide as long; pre-orbital carina faint; postorbital carina absent; malar space 0.33 of eye; antenna moderately stout; scape not exceeding front ocellus, longer than segments 4-6 combined, reducing beyond the middle; pedicel almost as long as thick; annellus 2.50 times as wide as long; funicular segments 1-3 and 5-6 equal; segments 4 and 7 shorter; segment 7 shortest; club about 2 times the preceding segment and 1.20 times as long as thick.

Thorax closely reticulately umbilicately punctate, interspace rugose; scutum about 1.75 times as wide as long; scutellum wider than long, apical margin entire; fore wing a little more than 2.50 time as long as wide; veins *sm m : pm : st* ratio 205 : 100 : 35 : 12; hind coxae and femur closely punctate, without inner tooth; hind femur about 1 75 times as long as wide, without tooth at base, with 14 teeth; teeth 2, 3, 13 and 14 small, others large; tibia a little longer than femur

Abdomen a little more than 1.50 times thorax, about 2.60 times as long as high; first 2 tergites shagreened; sixth tergite with 8-9 transverse rows of shallow punctae.

Type locality India : Madurai
Distribution India; N. Borneo and Philippines
Host Unknown

Brachymeria bengalensis (Cameron)

(Fig. 74)

1897 *Chalcis bengalensis*, Cameron, *Mem. Proc. Manchester Lit. Philos. Soc.*, 41 (4) : 39.
1925 *Chalcis bengalensis*, Ramakr., *Spol. Zeyl.*, 13 : 238.
1963 *Brachymeria yasumatsui*, Habu, *Mushi*, 37 (9) : 111-114.
1970 *Brachymeria scrobatae*, Joseph *et al.*, *Oriental Ins.*, 4 (3) : 286-289.
1973 *Brachymeria bengalensis*, Joseph *et al.*, *Calicut Univ. Zool. Mon.*, 1 : 99.

Female Length 4.50-4.70 mm. Body black; tegulae yellowish-brown with the basal 0.33 brownish-black; distal 0.50 of fore femora, fore tibiae and fore tarsi, distal margin of middle femora, and tibiae yellowish; hind femora mostly reddish-brown; tip with a small pale yellowish-red patch; basal 0.20 of the hind tibiae black, extending to tip ventrally, otherwise yellowish-black; abdominal tergites blackish-brown at the side.

Head a little wider than thorax, 1.25 times as wide as long; punctate, space between punctae finely rugose; scrobe smooth and shiny, a little less than 1.50 times as long as wide, attaining front ocellus; front ocellar space about 0.50 of the interocellar; clypeus about 5 times as wide as long; labrum 1.60 times as wide as long; frons without pre-orbital carina; postorbital carina reaching the genotemporal margin; lateral carina of scrobe continued to clypeus; malar space about 0.16 eye; scape not reaching front ocellus, slightly longer than segments 4-6 combined, somewhat reduced beyond basal 0.50; pedicel a little thicker than long; annellus very short; first funicular segment hardly thicker than long; second, third and fourth subequal; segment 5 a little longer than 2; segment 6 a little longer than segment 5; segment 7 as long as and as thick as segment 2; segments 3, 4 and 6 subequal, a little longer than 2; segment 5 slightly thicker than 4; segment 7 and club equally thick; club a little less than 2 times as long as preceding segment, about 1 75 times as long as thick.

Thorax closely, reticulately punctate, space between punctae rugose; a little over 1.50 times as wide as long; scutellum less than 1.50 times as wide as long, distinctly emarginate and bilobed; fore wing 2.50 times as long as wide; veins *sm m pm st* ratio 200 : 100 50 : 17; hind coxae punctate; femora about 1 70 times as long as wide; minutely punctate, with 11-12 teeth; tibiae a little longer than femora.

Abdomen a little shorter than thorax and about 1.25 times as long as its own height; first tergite smooth and shiny; second tergite with scattered punctae at base in the middle, punctae at sides closer, more prominent; distal 0.50 of second tergite smooth; sixth tergite closely punctate.

Male Length 4.50-4.60 mm. Head as wide as thorax; antenna stouter; funicular segments 2, 5 and 6 subequal segments 3 and 6 subequal.

Type locality India

Distribution India, Malaya, Indonesia, N. Guinea, Vietnam, Laos, Thailand, Ryuke Islands, Taiwan and Philippines.

Brachymeria bengalensis pulchellae Joseph, Narendran & Joy

(Fig. 68)

1972 *Brachymeria bengalensis pulchellae*, Joseph *et al.*, *Oriental Ins.*, 6 (4) : 422-424.

1973 *Brachymeria bengalensis pulchellae*, Joseph *et al.*, *Calicut Univ. Zool. Mon.*, 1 : 102.

Female Length 4.75-5.80 mm. Body black; tegulae yellow; wings smoky, veins brownish-black; hind coxae reddish-black to black; fore femora brownish-black in basal 0.50, yellow beyond; middle femora brownish-black, with yellow tip; hind femora reddish

or orange-brown, tip with a small yellow patch; fore and middle tibiae yellow, with small brownish patch in the middle inside; hind tibiae yellow, dark reddish at base, a dark brownish-red band along ventral carina inside and outside; tarsi yellow.

Head a little wider than thorax, 1.33 times as wide as long; shallowly obscurely punctate; scrobe deep, smooth and shiny, attaining front ocellus; front ocellar space a little more than 0.33 of the interocellar, which latter is about 3.25 times ocellocular; clypeus 5 times as wide as long; labrum 2.40 times as wide as long; pre-orbital carina absent; postorbital carina reaching the geno-temporal margin; malar space a little more than 0.33 eye; antenna stout; scape not exceeding the front ocellus, longer than segments 4-6 combined, slightly reduced beyond middle; pedicel as long as thick; funicular segments 1 and 2 subequal; segments 3-4 equal; fifth shorter than fourth and longer than sixth; seventh and sixth equal; club 2 times the preceding segment, a little more than 1.50 times its own thickness.

Thorax with large, reticulate-umbilicate punctae, closer than their diameter; scutum a little more than 1.50 times as wide as long; scutellum as wide as long, emarginate, with dense silvery pubescence; fore wing a little more than 2.50 times as long as wide; veins *sm : m pm st* ratio 170 : 100 : 50 : 17; hind coxae with a distinct tubercle, ventral side finely punctate; femora 1 75 times as long as wide, closely and finely punctate, with relatively shorter pubescence; inner side without protuberance near base, with 12 teeth.

Abdomen a little longer than thorax; first tergite shagreened in the middle and punctate at the sides; second tergite mostly with small and close punctae and with larger punctae at base; sixth tergite with 12-14 transverse rows of punctae; ovipositor exserted.

Male . Length 4.50-5.20 mm. No coxal tooth on the inner ventral side of hind coxa; sixth tergite with 6-8 transverse rows of punctae; abdomen a little shorter than pronotum, mesoscutum and scutellum combined.

Distribution India

Host *Sylepta derogata* F., *Utetheisa pulchella, Earias* sp.

Brachymeria burksi Chhotani

(Fig. 72)

1966 *Brachymeria burksi,* Chhotani, *J. Zool. Soc. India,* 18 (1 & 2) : 89-93.

1973 *Brachymeria burksi,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 68.

Female Length of female 4.20 mm., male 3.50-4.00 mm. Body black; tegulae, distal 0.33 of fore femur, fore tibia (except a dark brown spot in middle), distal 0.25 of middle femora, middle tibiae except for a dark brown ring in middle, tip of hind femora, hind tibiae in part and all tarsi pale yellow.

Head wider than long; frons and vertex densely punctate; preorbital and postorbital carinae absent; scrobe reaching the front ocellus; ocellocular and front ocellar spaces equal to ocellar diameter; clypeus transverse, anterior margin almost straight; right mandible with 3 teeth, middle tooth short; left mandible with 2 teeth.

Thorax closely, deeply punctate; pronotum margined in the middle in front; scutum impunctate in front; scutellum with apex entire; shagreened laterally, with 4 incomplete ridges; fore wing with veins *sm : m : pm : st* ratio 250 : 100 : 33 : 16; hind coxa without a median tooth; hind femur matt, with 11-13 teeth, basal teeth more widely spaced than the distal ones.

Abdomen short; first tergite shiny; second tergite shagreened, smooth only near apex, with scattered bristles at sides; sixth tergite umbilicately punctate; ovipositor slightly exserted.

Type locality : Calcutta

Distribution : India

Host : Aspidomorpha miliaris (F.)

Brachymeria dunensis Joseph, Narendran & Joy

(Fig. 68)

1972 *Brachymeria dunensis,* Joseph *et al., Indian Forester,* 98 (9) : 552-554.
1973 *Brachymeria dunensis,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 21.

Female : Length 4.32 mm. Body black; tegulae yellowish; coxae, trochanters and femora brownish-black with tips of femora obscurely yellow; fore and middle tibiae brown except for the yellowish base and tip; tarsi yellow; hind tibia brownish-black, with tip yellow; tarsi yellowish; abdomen brownish-black.

Head as wide as thorax, a little more than 1.33 times as wide as long; vertex distinctly punctate; punctae on frons obscure; scrobe deep, smooth, shiny, reaching front ocellus, somewhat longer than wide; front ocellar space a little more than 0.33 of interocellar space, which latter is a little less than 3 times the ocellocular; clypeus about 4 times as wide as long; labrum about 2 times as wide as long; preorbital and postorbital carinae absent; lateral ridge of scrobe not produced below toruli; malar space 0.40 of eye; antennae stout, scape not quite reaching the front ocellus, shorter than segments 4-6 combined, reduced beyond the middle; pedicel short, as long as thick; annellus 5 times as wide as long; first funicular segment longer than second; segments 2-4 equal; segments 5-8 subequal; club a little shorter than 2 times its thickness.

Thorax closely, umbilicately punctate; mesoscutum 1.80 times as wide as long; scutellum as long as wide; posteriorly emarginate; fore wing about 2.50 times as long as wide; veins *sm : m : pm : st* ratio 200 : 100 : 33 : 16; hind coxae shallowly punctate below, with

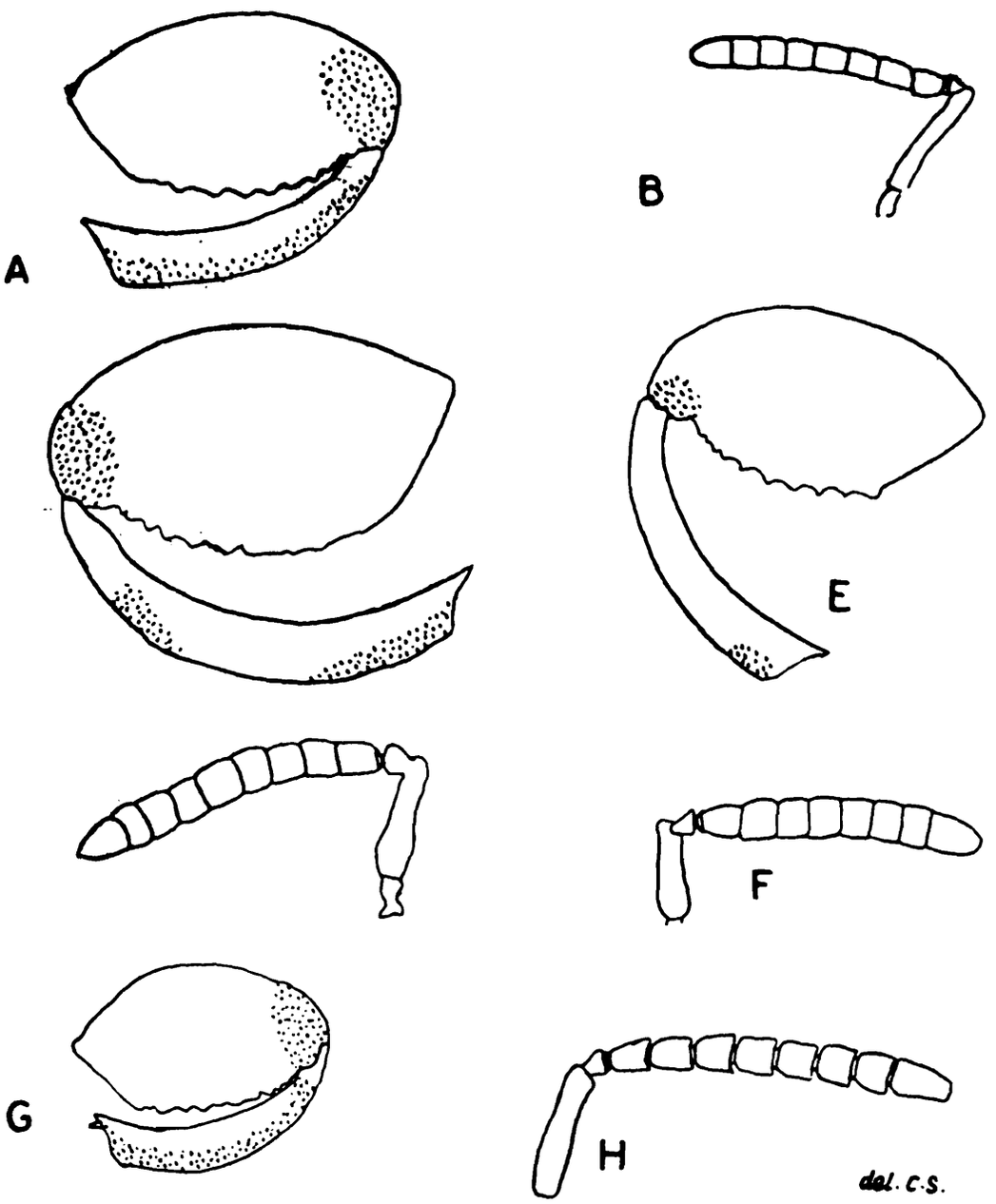

FIG. 68. A-B.*Brachymeria bengalensis pulchellae* Joseph *et al.*, female : A. Hind femur and tibia; B. Antenna; C-D. *Brachymeria coxodentata* Joseph *et al.*, female: C. Hind femur and tibia; D. Antenna; E-F. *Brachymeria dunensis* Joseph *et al., female :* E. Hind femur and tibia; F. Antenna; G-H. *Brachymeria lasus* (Walker), female : G. Hind femur and tibia; H. Antenna.

inner tooth; side smooth, shiny above; hind femora a little less than 2 times as long as wide, minutely punctate with 10 teeth; first tergite obscurely shagreened and shiny; second tergite sparsely finely punctate at base and sides; sixth tergite with seven to eight transverse rows of punctae; ovipositor only slightly exserted.

Type locality : India

Distribution India

Host *Dasychira grotei*

Brachymeria coxodentata Joseph, Narendran & Joy

(Fig. 68)

1970 *Brachymeria coxodentata,* Joseph *et al., Oriental Ins.,* 4 (3) : 281-283.
1973 *Brachymeria coxodentata,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 16.

Female Length 3.25 mm. Body black; tegulae pale yellowish-brown; tips of fore femora, tibiae and tarsi yellow; a brownish patch basally on the inside on fore tibiae; tips of middle femora, tibiae and tarsi yellow, except blackish-brown base of tibia; hind coxa and femora black, except the dark yellow tip; hind tibiae mostly black, except for 2 pale dark yellow patches near base and apex; hind tarsi yellow.

Head somewhat wider than thorax and a little over 1.33 times as wide as long; closely punctate, with interspace finely rugose; scrobe smooth and shiny, about 1.33 times as wide as long, deep, reaching above to the front ocellus; front ocellar space about 0.50 of interocellar space; clypeus about 4.66 times as wide as long; labrum about 2.50 times as wide as long; pre-orbital carina absent; postorbital carina reaching the genotemporal margin; frontal carina extending beyond the toruli; malar space about 0.33 of the height of eye; antenna slender, scape not exceeding the front ocellus, distinctly longer than segments 4-6 combined; reduced in the middle; pedicel a little longer than thick; annellus about 5 times as wide as long; first funicular segment distinctly longer than thick; second and third segments equal; fourth somewhat thicker than second; fifth segment a little shorter than fourth; sixth as long as fourth; seventh segment as long as segment fifth; eighth segment a little longer than the preceding and thicker than all others; club almost 2 times as long as thick.

Thorax closely, umbilicately punctate, interspace rugose; mesoscutum a little less than 2 times as wide as long; parapsidal furrows distinct; scutellum about 1.33 times as wide as long; fore wing 3 times as long as wide; veins *sm : m pm st* ratio 160 : 100 : 33 : 33; hind coxae punctate, pubescence sparse and with inner tooth; hind femora about 1 75 times as long as wide, rugose, densely pubescent, teeth 10; hind tibiae a little longer than hind femur

Abdomen about 1.50 times as long as high; first tergite shagreened, sparsely pubescent on sides at base; sixth tergite closely punctate.

Type locality India

Distribution India, Indo-China and Philippines

Brachymeria lasus (Walker)

(Fig. 68)

1841 *Chalcis lasus,* Walker, *Entomologist,* 219.
1874 *Chalcis obscurata,* Walker in Smith : *Trans. ent. Soc. London,* 399-400.

1883 *Chalcis euploeae* (partim), Kirby, *(nec* Westwood) *J. Linn. Soc. London.* (Zool.) 17 : 68.

1901 *Chalcis obscurata,* Ashmead, *Fauna Hawai.,* 1 : 306-307.

1906 *Chalcis obscurata,* Banks, *Philipp. J. Sci.,* 1 : 215. pl. 4.

1910 *Chalcis obscurata,* Crawford, *U.S. Dept. Agric. Ent.,* 19 (2) : 14, 17, figs. 15, 16.

1973 *Brachymeria lasus,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 29.

Female : Length 5.00-7.00 mm. Body black; tegulae pale yellow, basally dark reddish-brown, rarely orange or brownish, coxae black, apically yellow; fore and middle tibiae yellow with or without black patch below; hind tibiae yellow with base wholly black or reddish-black; legs rarely red or orange.

Head as wide as thorax; punctation fine and close; pre-orbital carina absent; scrobe smooth, deep, reaching front ocellus; malar space about 0.25 eye; postorbital carina reaching posterior margin of genotemporal region; scape not exceeding front ocellus, a little longer than segments 4-6 combined, somewhat thickened about basal 0.33; pedicel almost subglobose; funicular segments 1-5 slightly longer than thick, subequal; club 2 times the last funicular segment.

Thorax sparsely punctate; scutellum often obscurely margined posteriorly, sometimes bilobed; fore wing about 2.40 times as long as wide; veins *sm : m : pm : st* ratio 200 : 100 : 33 : 17; hind coxae closely, strongly punctate below, with one protuberance before apex; hind femora 1 75 times as long as wide, closely minutely punctate, with 11-12 teeth; tooth 2 minute.

Abdomen ovate, short, subequal to thorax; first tergite smooth, second tergite minutely punctate, sixth tergite more coarsely punctate and with microsculpture; ovipositor exserted.

Male : Length 3.25-5.50 mm. Otherwise as in female.

Type locality : India

Distribution India, Burma, Java, Sumatra, New Guinea, Borneo, Indo-China, China, Formosa, Japan, Korea, Philippines, Fiji and Hawai.

Host : Unknown

Brachymeria albotibialis (Ashmead)

(Fig. 69)

1904 *Chalcis albotibialis,* Ashmead, *J.N.Y. Ent. Soc.,* 12 : 9.

1930 *Brachymeria albotibialis,* Gahan, *Proc. U.S. Nat. Mus.,* 77 : 12.

1973 *Brachymeria albotibialis,* Joseph *et al., Calicut Uni. Zool. Mon.,* 26.

1977 *Brachymeria parnara,* Narendran, *Orient. Ins.,* 11 (3) : 394.

Female : Length 3.50 mm. Body black; tegulae yellow; coxae and trochanters very dark brown to black; femora very dark red to black with yellow tip; fore and middle tibiae yellow; hind tibiae yellow with reddish-black extending from base to tip along the ventral carina; tarsi yellow with the tip dark brown; abdomen often red.

Head a little wider than thorax, about 1.50 times as wide as long, vertex punctate; scrobe about 1.33 times as long as wide, deep, smooth, shiny, not reaching front ocellus; front ocellar space 2.50 times interocellar space, which latter is 2.50 the ocellocular space; clypeus about 5 times as wide as long; pre-orbital carina absent; postorbital carina reaching genotemporal margin; lateral ridges of scrobe not produced in front of toruli; malar space a little less than 0.33 eye; antenna slender, scape not exceeding front ocellus, distinctly longer than segments 4-6 combined, thickened about the middle; pedicel subglobose; annellus 2.33 times as wide as long; funicular segments 2-6 subequal, gradually thicker apically.

Mesonotum closely umbilicately punctate; scutum a little more than 2 times as wide as long; scutellum as wide as long; fore wing about 2.50 times as long as wide; veins *sm : m : pm : st* ratio 200 : 100 : 35 : 12; hind coxa with a distinct tooth, shagreened shiny; hind femora 1.60 times as long as wide, externally matt, obscurely finely punctate, with 13 black teeth; medially without a basal tooth; hind tibiae a little longer than femora.

Abdomen distinctly shorter than thorax; first tergite faintly shagreened; sixth tergite with 6 rows of fine punctae; ovipositor not exserted.

Type locality Philippines

Distribution : India, Philippines

Host *Parnara mathias* (Hesperiidae)

Brachymeria intermedia (Nees)

(Fig. 69)

1834 *Chalcis intermedia,* Nees, *Hym. Ichn. Affin. Monogr.* 2 : 29.
1898 *Chalcis intermedia,* Dalla Torre, *Cat. Hym.,* 5 : 389.
1916 *Chalcis flavipies,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* (3) 7 : 78.
1929 *Brachymeria intermedia,* Burges & Crossman, *Tech. Bull., U.S. Dept. Agr.,* 86 : 116.
1935 *Brachymeria intermedia,* Dowden, *J. Agric. Res.,* 50 : 497.
1951 *Brachymeria intermedia,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (1) : 22.
1960 *Brachymeria intermedia,* Burks, *Ent. News,* 71 : 62.
1960 *Brachymeria intermedia,* Burks, *Trans. American ent. Soc.,* 86 : 249-250.
1973 *Brachymeria intermedia,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 38.
1979 *Brachymeria intermedia,* Krombein *et al.* Hym. N. America, 1 : 872.

Female : Length 5.25-6.00 mm. Body black; tegulae yellow, except for the brownish-black basal 0.20; tips of fore femora and tibiae yellow; tarsi pale brownish-yellow, tips of middle femora and tibiae yellow; tarsi pale brownish-yellow; hind coxae black; femora black, except for the yellowish distal 0.33; tibiae yellow, ventral carina black; tarsi brownish-yellow.

Head a little wider than thorax, about 1.33 times as wide as long; punctate; scrobe deep, smooth, shiny, reaching front ocellus; front ocellar space a little less than 0.50 of the interocellar space, which latter is 2.50 times ocellocular; clypeus a little less than 5 times as wide as long; frons with deep scattered punctae; malar space a little more than 0.20 eye; antenna stout; scape not exceeding the front ocellus, longer than segments 4-6 combined, reduced beyond the middle; pedicel a little longer than thick; annellus a little over 6 times as wide as long; first funicular segment a little longer than thick, shorter than second; funicular segments 1, 5 and 7 subequal; segments 2 and 4 subequal; third and sixth subequal but shorter than first; all segments gradually thickened; club a little less than 2 times the seventh and a little less than 1.75 its own thickness.

Thorax umbilicately punctate; punctae rather close on mesoscutum, on the scapula smaller; separated by about 0.50 their own diameters on scapulae and scutellum; mesoscutum 1.50 times as wide as long; scutellum a little over 1.50 times as wide as long; fore wing a little less than 2.75 as long as wide; veins *sm : m : pm : st* ratio 134 : 100 : 35 : 15; hind coxae distinctly, deeply punctate, below with a tooth on the inner side; smooth above; hind femora a little more than 1.50 times as long as wide, deeply punctate; with 11 teeth; teeth 1, 3-6 large; 7-8 smaller; 2, 9 still smaller, 10 and 11 minute; hind tibiae almost equal to femora.

Abdomen obtuse at tip, distinctly longer than thorax, a little over 0.60 as long as high; first tergite smooth, except for a few punctae laterally; fine microsculpture at base; sixth tergite with about 20 longitudinal, deep, close punctae; ovipositor exserted.

Male : Length 4.75-4.90 mm. Second tergite with deep scattered punctae anteriorly, otherwise with fine microsculptures; hind coxa without tooth.

Type locality : Europe

Distribution : India, Europe, Mediterranean Region, Middle East including Iraq and Iran, North and South America.

Host : Pupae of Lepidoptera.

Brachymeria intermedia porthetrialis Joseph, Narendran & Joy

(Fig. 69)

1973 *Brachymeria intermedia porthetrialis,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 42.

Female : Length 3.75-4.50 mm. Body black; tegulae yellow; fore coxae, trochanters and femora brownish-black, except yellow femoral tips; tibiae yellow, with brownish-black on the outer, inner and ventral sides; middle coxae, trochanters and femora brownish-black, except yellow femoral tips; tibiae yellow, with brownish-black

in the middle; hind coxae, trochanters and femora brownish-black, except yellow femoral tips; tibiae brownish-black, with yellow sub-basally and apically.

Head somewhat narrower than thorax, about 1.33 times as wide as long, closely, reticulately punctate; scrobe deep, smooth, shiny except rugulose sides, reaching front ocellus; frons rugose and irregularly carinate, below scrobe rugose; front ocellar space about 0.50 interocellar; clypeus about 4 times as wide as long; pre-orbital carina very faint; postorbital carina well developed, not reaching the

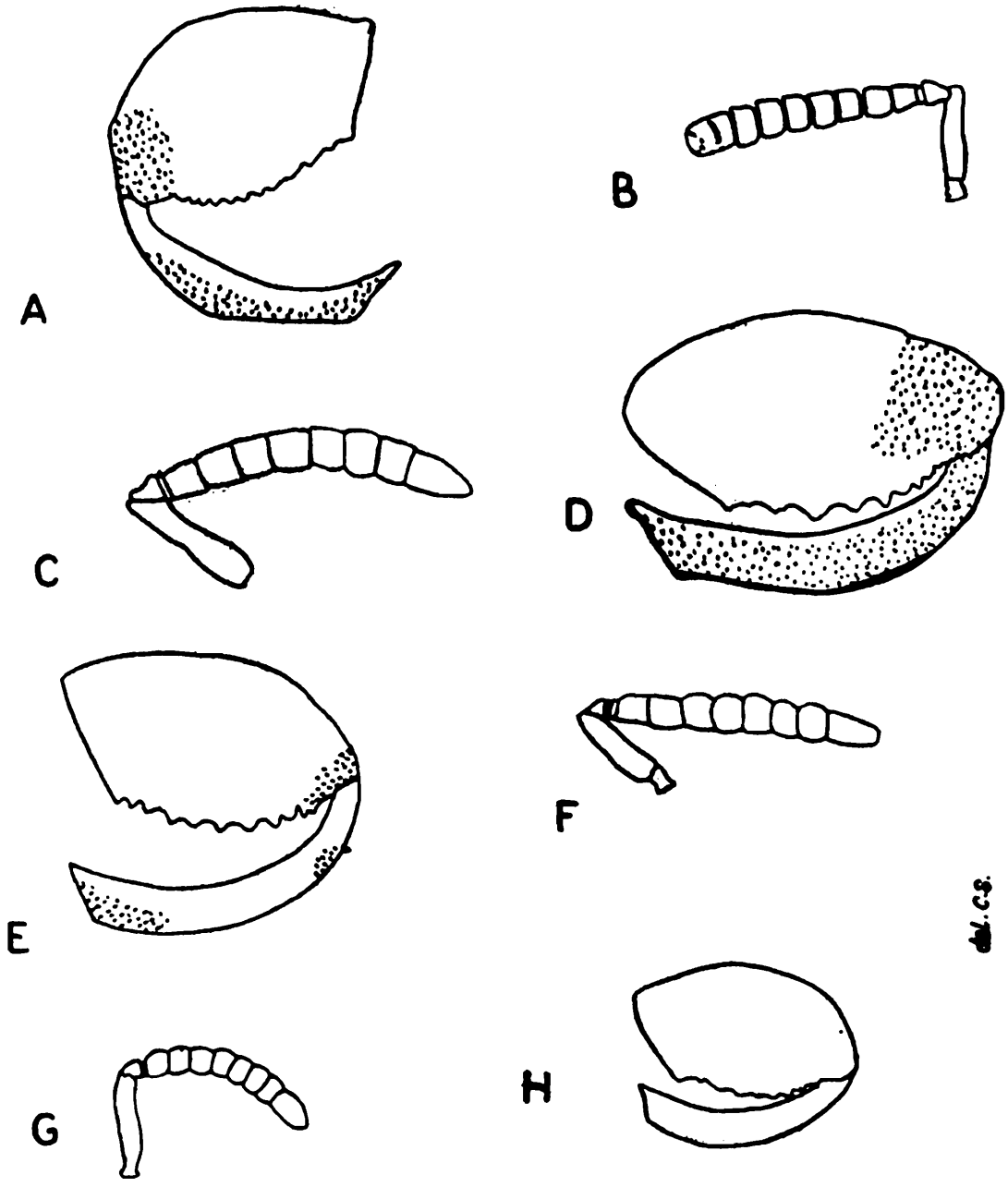

FIG. 69. A-B. *Brachymeria albotibialis* (Ashmead), female : A. Hind femur and tibia; B. Antenna; C-D. *Brachymeria intermedia* (Nees), female : C. Antenna; D. Hind femur and tibia; E-F. *Brachymeria intermedia porthetrialis* Joseph *et al.*, female : E. Hind femur and tibia; F. Antenna; G-H. *Brachymeria menoni* Joseph *et al.*, male : G. Antenna; H. Hind femur and tibia.

genotemporal margin; malar space 2 times eye; antenna stout; scape not exceeding front ocellus, hardly a little longer than segments 4-6 combined, reduced beyond middle; pedicel longer than thick; annellus 4 times as wide as long; first funicular segment hardly thicker than long; second a little longer than first; segments 3 and 4 subequal; segments 5 and 6 subequal, hardly a little shorter than segment 4; segment 7 shorter than 6; segments 2, 3, 4 and 7 equally thick; segment 5 a little thicker than segment 4 and hardly a little shorter than segment 6; club 2 times as long as preceding segment, about 1.60 times as long as its own thickness.

Thorax closely, reticulately punctate, interspace less than diameter of punctae, rugose; mesoscutum about 1.80 times as wide as long; scutellum a little wider than long, weakly emarginate behind; fore wing 2.50 times as long as wide; veins *sm : m : pm : st* ratio 200 : 100 : 35 : 17; hind coxae with tubercle inside, closely punctate; hind femora about 1.80 times as long as wide, closely punctate, with 10-12 teeth; teeth 1-3 equal, 4-8 widely spaced; hind tibiae longer than femora; abdomen shorter than thorax; first tergite shiny and faintly shagreened; second tergite punctate at base, otherwise finely shagreened; sixth tergite with 14-16 rows of 8-9 punctae.

Type locality : India

Distribution : India, Thailand & Java

Host : Porthetria sp. (Lymatriidae) on *Ficus religiosa* Linn.

Brachymeria nephantidis Gahan

1930 *Brachymeria nephantidis,* Gahan, *Proc. U.S. Natl. Mus.,* 2831(77) : 5.

1973 *Brachymeria nephantidis,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 75.

Female : Length 3.77-4.15 mm. Body black; tegulae yellow; middle trochanters brown at tips; fore and middle femora with yellow tips; hind femora with yellow spot at tip; fore and middle tibiae yellow basally and apically; hind tibiae black in the middle and along inner margin yellow subbasally and tip; sometimes also brownish or reddish at base; tarsi brownish-red.

Head almost as wide as thorax, a little less than 1.25 times as wide as long, irregularly shallowly punctate; scrobe deep, smooth, shiny; front ocellar space 0.30 of interocellar space, which latter is about 5 times ocellocular space; clypeus about 5 times as wide as long, sparsely punctate; labrum about 2 times as wide as long; preorbital carina abbreviated towards vertex; postorbital carina reaching genotemporal margin; lateral ridges of scrobe not produced in below toruli; malar space distinctly less than 0.33 eye; antenna moderately stout; scape not exceeding front ocellus, almost as long as segments 4-8 combined; pedicel distinctly longer than thick; annellus about 4 times as wide as long; first funicular segment a little longer than thick; segments 3-7 subequal; club about 2 times the preceding segment, a little over 2 times its own thickness.

Thorax closely, umbilicately punctate, interspaces less than punctae; scutum a little less than 1.75 times as wide as long; scutellum a little wider than long; fore wing a little over 2.50 times as long as wide; veins *sm m pm st* ratio 200 : 100 : 27 : 14; hind coxae finely sculptured and with inner ventral tooth; hind femora finely punctate, with a row of 9-11 (usually 10) acute teeth; hind tibiae longer than femur; abdomen distinctly longer than thorax, a little less than 1 75 times as long as wide; first tergite smooth, shiny; second tergite finely shagreened; sixth tergite obscurely punctate; ovipositor distinctly exserted.

Male Length 3.00-4.20 mm. Scape equal to segments 4-7 combined; abdomen shorter than thorax.

Type locality Coimbatore

Distribution : India and Sri Lanka

Host *Nephantis serinopa* M. (Cryptophasidae)

Brachymeria menoni Joseph, Narendran & Joy

(Fig. 69)

1973 *Brachymeria menoni,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 63.

Male Length 2.90 mm. Body black; tegulae brown; fore and middle tibiae with small dirty brownish-yellow patch at base and apex; tarsi pale yellow; hind tibiae faintly brown at tip; tarsi pale brown.

Head as wise as thorax, somewhat less than 1.33 times as wide as long; vertex shallowly punctate, interspace rugose; scrobe deep, smooth, shiny, reaching front ocellus, a little more than 1 75 times as long as wide; front ocellar space 0.33 of interocellar space, which latter is 4.50 times the ocellocular; clypeus 5 times as wide as long; pre-orbital carina distinct; postorbital carina reaching the geno-temporal margin; malar space 0.40 eye; antenna slender; scape not exceeding front ocellus, longer than segments 4-6 combined, reduced beyond the middle; pedicel a little longer than thick; annellus about 7 times as wide as long; first and second funicular segments subequal; segments 3, 4 and 5 subequal; segments 6 and 7 subequal; club about 2.50 times the preceding segment, about 1.50 times as long as thick.

Thorax closely, reticulately umbilicately punctate; scutum 1.50 times as wide as long; scutellum as long as wide, apical margin entire; fore wing 2.50 times as long as wide; veins *sm : m : pm : st* ratio 205 : 100 : 35 : 16; hind coxa with distinct punctae, without inner tooth; hind femora about 1.75 times as long as wide, minutely, closely punctate, without basal tooth; ventral margin with a row of 11 teeth, of which the first is large.

Abdomen distinctly shorter than thorax; first tergite smooth and shiny; second tergite with a single row of punctae basally; sixth tergite

small, with 2 or 3 transverse rows of deep 12-15 punctae each; interspace between rugose.

Female : Length 3.20 mm. Differs from male in the abdomen distinctly longer than thorax; sixth tergite with 2 or 3 transverse rows of shallow, more or less faint punctae; second tergite smooth with a single row of punctae basally.

Type locality : Pakistan

Distribution : Pakistan, India and New-Guinea

Hosts : Metriona circumdata H. (Chrysomelidae) breeding in *Ipomaea batatas.*

Brachymeria raoi Joseph, Narendran & Joy

(Fig. 70)

1972 *Brachymeria raoi,* Joseph *et al., Tech. Bull. Commonw. Inst. Biol. Control,* 15 : 21-24.

1973 *Brachymeria raoi,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 69.

Female : Length 4.18 mm. Body black; tegulae pale yellowish-brown and blackish-brown at base; fore coxa and trochanter brownish-black; femur brownish-black, tinged pale reddish-yellow at tip; tibiae brownish-black except the reddish-brown tip; middle coxae and trochanters brownish-black; femur brownish-black tinged pale reddish-yellow at tip; brownish-black, except the reddish-brown tip with black tinge; hind coxae, trochanters brownish-black; tibiae brownish-black, except the yellowish-brown tip.

Head slightly wider than thorax, about 1.25 times as wide as long, rugose with close reticulate punctae; scrobe deep, rugulose, about 1.50 times as long wide, occupying a little over 0.50 of the interocellar space, not reaching front ocellus; frons coarsely punctate, about 4 times as wide as long; clypeus fairly smooth, but not clearly demarcated; front ocellar space about 0.50 of interocellar space, which latter is 2 times ocellar diameter; labrum a little more than 1.50 times as wide as long; pre-orbital and postorbital carinae present, latter sinuate and joining gena; malar space a little over 0.30 of eye; antenna slender; scape not exceeding front ocellus, longer than segments 4-6 combined, reduced beyond the middle; pedicel longer than thick; annellus 2.50 times as wide as long; segment 4 almost as thick as long; segments 5-8 subequal, segment 6 thicker than 5 and almost as thick as the 7, 8, 9 and 10 and the club; segment 9 as long as 10; club a little over 2 times tenth segment and a little more than 1.50 times its own thickness.

Thorax closely, reticulately umbilicately punctate, interspace narrow and rugose; mesoscutum 1.75 times as wide as long; parapsidal furrows distinct; scutellum not much wider than long; moderately high in lateral view, gently sloping behind; apical margin

explanate and weakly emarginate with sparse pubescence; fore wing about 2.50 times as long as wide; veins *sm : m : pm : st* ratio 20 : 10 : 9 : 4; hind coxa ventrally with close punctae and pubescence but without inner tooth; hind femur with close punctae and pubescence outside, about 1.75 times as long as wide; ventral margin with a row of 12 black teeth; tooth one largest, teeth 4-9 large, 2 and 3 small, 10-12 smallest; inner side without a tooth at base; tibiae a little longer than hind femur

Abdomen distinctly longer than thorax, a little longer than 2 times height; first tergite smooth, shiny, occupying about 0.50 of abdomen; second tergite with microsculptures; sixth tergite rugose, with very few punctures and sparse pubescence.

Type locality Bangalore
Distribution India, Indo-China and China
Host : Unknown

Brachymeria koduvalliensis Joseph, Narendran & Joy

(Fig. 70)

1970 *Brachymeria koduvalliensis,* Joseph *et al., Agric. Res. J. Kerala,* 8(1) : 24-25.
1973 *Brachymeria koduvalliensis,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 48.

Female : Length 3.40-3.60 mm. Body black; tegulae yellow; basally blackish-brown; fore coxae and trochanters black; fore femora black except for the yellow distal 0.40; tibiae yellow, tarsi yellow; middle leg concolorous with fore leg, except for only in apical 0.20 of femora; hind coxae and trochanters black; femora black except for yellowish apical 0.25; tibiae yellow, except for the black ventral carina; tarsi yellow.

Head a little wider than thorax, a little less than 1.50 times as wide as long; with close reticulate punctae; scrobe smooth, length about 1.33 times its own width, moderately deep, attaining front ocellus; lateral ridge of scrobe not produced below toruli; front ocellar space less than 0.50 of the interocellar; clypeus a little over 4 times as wide as long; pre-orbital carina indistinct near the malar ridge; postorbital carina joins the genotemporal margin; malar space about 0.20 eye; antennae moderately stout, increasing in thickness from segments 4-10; scape not exceeding front ocellus, a little shorter than segments 4-6 combined, reduced beyond the middle; pedicel as long as thick; annellus about 3 times as wide as long; funicular segments 1-7 becoming thicker; segments 1-5 subequal; segment 6 a little longer than 5; segment 7 shorter than 6; club a little over 3 times the last funicular segment, a little less than 1 75 times as long as thick.

Thorax closely, umbilicately punctate, pronotum, mesoscutum, scapulae and scutellum; scutum a little more than 1.60 times as wide

as long; scutellum 1.20 times as wide as long; fore wing about 2.60 times as long as wide, veins *sm : m : st* ratio 205 : 100 : 30; hind coxa with large, close punctae; hind femora about 1.60 times as long as wide, with close punctae, with 14 teeth; the first tooth largest; second, third, thirteenth and fourteenth small; fourth and twelfth large; hind tibiae a little longer than femora.

Abdomen a little longer than thorax; first tergite covering 0.50 of dorsum, shiny; second tergite with microsculpture; sixth tergite with 7 rows of punctae.

Type locality : India

Distribution : India and Philippines

Host : Microplitis maculipennis (Braconidae)

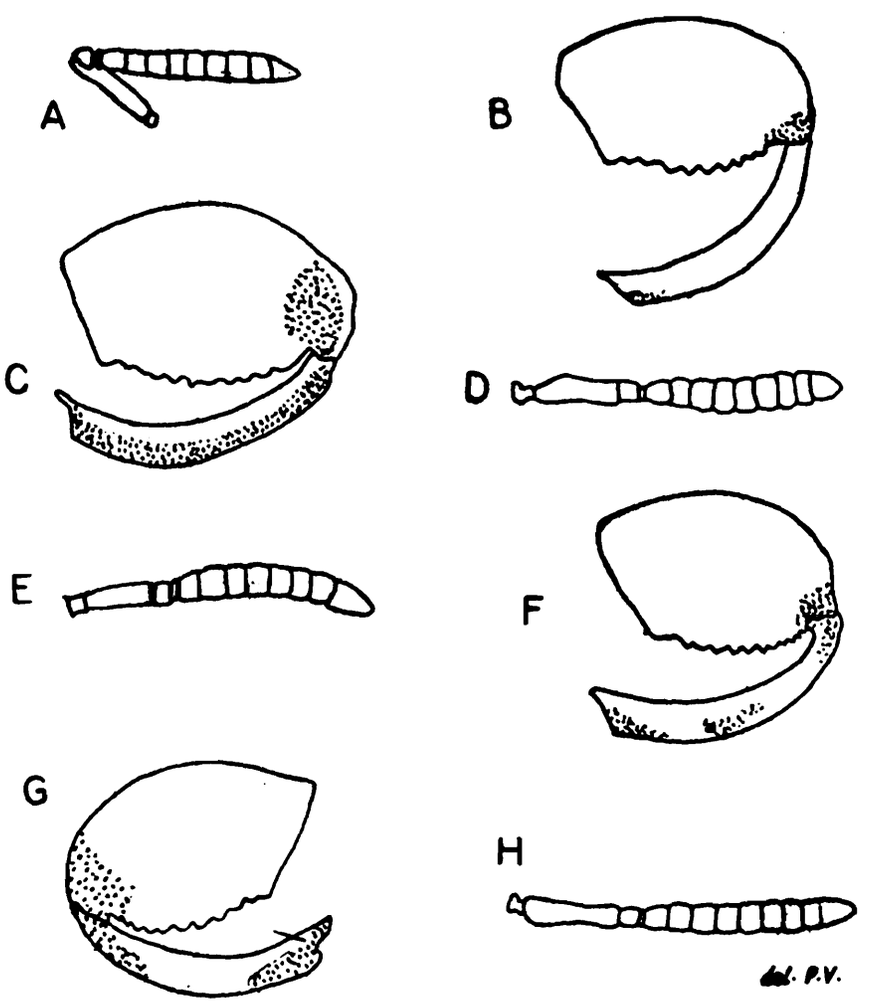

FIG. 70. A-B. *Brachymeria raoi* Joseph *et al.*, female; A. Antenna.; B. Hind femur and tibia; C-D. *Brachymeria koduvalliensis* Joseph *et al.*, female; C. Hind femur and tibia; D. Antenna; E-F. *Brachymeria wiebesina* Joseph *et al.*, female; E. Antenna; F. Hind femur and tibia; G-H. *Brachymeria hime attevae* Joseph *et al.*, female; G. Hind femur and tibia; H. Antenna.

Brachymeria wiebesina Joseph, Narendran & Joy

(Fig. 70)

1973 *Brachymeria wiebesina,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 129.

Female/Male : Length female 2.50-2.75 and male 2.50-2.70 mm. Body black; tegulae yellow; antenna blackish-red or sometimes brownish-black; tips of femora and fore tibia yellow, middle of tibia; tarsi pale yellow; middle tibia yellow with brownish-black in the middle; tarsi pale yellow; hind tibia yellow at tip and base; tarsi pale yellow.

Head almost as wide as thorax, a little less than 1.50 times as wide as long, obscurely punctate, interspaces rugulose; scrobe deep, smooth, shiny, not reaching the front ocellus; front ocellar space a little more than 0.33 interocellar, which latter is about 3 times the ocellocular; clypeus 2.25 times as wide as long; labrum a little less than 3 times as wide as long; pre-orbital and postorbital carinae well developed; malar space a little more than 0.33 eye; antenna slender; scape not exceeding the front ocellus, as long as segments 4-6 combined, slightly reduced beyond middle; pedicel a little thicker than long; annellus about 4 times as wide as long; first 2 funicular segments subequal; segments 3 and 4 subequal and shorter than 2; segment 5 a little longer than 4; segment 6 shorter than 5 and longer than 7; segments 4-9 gradually becoming thicker; club a little more than 2 times the preceding segment and about 1.50 times as long as thick.

Thorax closely, minutely, reticulately umbilicately punctate, interspace rugose; scutum a little less than 1.50 times as wide as long; scutellum a little wider than long; fore wing about 2.50 times its width; veins *sm* : *m* : *pm* : *st* ratio 195 : 100 : 33 : 16; hind coxae punctate; hind femora a little more than 2.50 times as long as wide, reticulate and minutely punctate, inner without basal tooth, with a row of 13 teeth.

Abdomen a little longer than thorax; first tergite smooth, shiny, with very faint, minute, sparse punctae behind the middle; second tergite broad, smooth and shiny with very faint, sparse punctae behind; sixth tergite with 3 transverse rows of obscure punctae; ovipositor exserted.

Type locality : Borneo

Distribution : British Borneo, Indo-China, Thailand, Philippines, Malaya, India.

Host : Unknown Chrysomelid on *Ipomaea batatas*

Brachymeria hime Habu

1960 *Brachymeria hime,* Habu, *Bull. Nat. Inst. Agric. Sci., Japan,* (C) 11 : 199-201.

1962 *Brachymeria hime,* Habu, *Fauna Japonica,* 58-61.

1973 *Brachymeria hime,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 121.

Female : Length 3.50 mm. Body black; tegulae yellow; trochanters brown; femora with yellow ring at tip; fore tibiae yellow basally and apically, yellow connected together above; middle with narrow basal and rather wide apical yellow; hind tibiae widely yellow at base, brownish-yellow apically.

Head slightly wider than thorax, shallowly punctate, interspace weakly carinate; scrobe smooth, distinctly striate apically, reaching front ocellus; interocellar space 2.33 times the ocellar diameter; preorbital carinae distinct; malar space a little more than 0.33 eyes; postorbital carina reaching posterior margin of genotemporal region; antennae slender; scape not reaching the front ocellus, somewhat longer than segments 4-6 combined; thickened in basal 0.30; pedicel a little longer than thick; annellus short; funicular segments 1-4 slightly becoming thicker, segment one as long as thick; segment 2 a little shorter than segment one; segments 2-7 subequal; club more than 2 times the preceding segment.

Thorax closely, shallowly punctate, interspace barely carinate, with microsculpture; scutum 1.33 times as wide as long; propodeum without tooth; fore wing 2.50 times as long as wide; veins *sm* : *m* : *pm* : *st* : ratio 210 100 : 33 : 16; hind coxae closely punctate, without protuberance; hind femora slightly more than 1.50 times as long as wide, finely punctate, reticulate; tooth on ventro-inner side near base indistinct, with 10 teeth.

Abdomen pointed, slightly longer than pronotum, mesoscutum and scutellum combined, widest in the middle; first tergite smooth; second tergite with a few small punctae at base; sixth tergite with obscure punctae; ovipositor exserted.

Type locality Japan

Distribution India, Nepal, Hong Kong, Philippines, Taiwan, Japan and Indo-China.

Host *Grapholitha molesta* Busck (Lepidoptera : Eucosmidae)

Brachymeria hime attevae Joseph, Narendran & Joy

(Fig. 70)

1972 *Brachymeria hime attevae,* Joseph *et al., Indian Forester,* 98 (9) : 556-558.
1973 *Brachymeria hime attevae,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 123.

Female Length 4.00 mm. Body black; tegulae yellow; trochanters brownish-black; femora with yellow at tip; tibiae yellow.

Head as wide as thorax, about 1.33 times as wide as long, shallowly punctate; interspace rugose; scrobe deep, smooth and shiny; front ocellar space a little over 0.33 of the interocellar which is a little over 5 times ocellocular and about 2.50 times ocellar diameter; clypeus about 6 times as wide as long; labrum 4 times as

wide as long; pre-orbital carina distinct; postorbital carina reaching the genotemporal margin; malar space a little over 0.33 eye; right mandibles with 3 and left mandible with 2 teeth; antennae slender; scape hardly reaching front ocellus, a little longer than segments 4-6 combined; pedicel a little longer than thick; annellus short; club 2 times the preceding segment and a little less than 2 times as long as thick.

Thorax closely, reticulately umbilicately punctate, interspace rugose; scutum a little over 1.80 times as wide as long; scutellum entire; fore wing a little less than 2.75 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 200 : 100 : 33 :16; hind coxae closely shallowly punctate, without inner tooth; hind femora a little more than 1.60 times as long as wide; closely, reticulately punctate, without basal tooth, with 12 teeth.

Abdomen pointed, longer than thorax, about 1.50 times its own height; first tergite smooth; second tergite with a few small punctae at base, more at sides, rest smooth; sixth tergite with 5-7 transverse row of obscure shallow punctae, interspace rugose; ovipositor exserted.

Male Length 3.50 mm. Abdomen shorter than thorax; sixth tergite with 3 transverse rows of punctae, somewhat more distinct in male than in the female.

Type locality India

Distribution India

Host *Atteva fabriciella* Swed. (Yponomeutidae) defoliator of *Ailanthus excelsa, Hapalia machaeralis* Walk. (Pyralidae) on *Tectona grandis* and pupa of *Nephantis serinopa* M.

Brachymeria excarinata Gahan

1925 *Brachymeria excarinata,* Gahan, *Philipp. J. Sci.,* 27 : 90-91.
1940 *Brachymeria excarinata,* Masi, *Mushi,* 13 : 2.
1940 *Brachymeria excarinata,* Masi, *Boll. Lab. Ent. Agr. Portici,* 3 : 261.
1940 *Brachymeria excarinata,* Pruthi *et* Mani, *ICAR Misc. Bull.,* 30 : 4, pl. iii, fig. 5
1960 *Brachymeria excarinata,* Habu, *Bull. Nat. Inst. Agr. Sci.,* (C) 11 : 201-206.
1962 *Brachymeria excarinata,* Habu, *Fauna Japonica,* 61-65.
1973 *Brachymeria excarinata,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 163.

Female . Length 3.00-4.50 mm. Body black; tegulae yellow, basally reddish-brown; femora with yellow tips; fore tibiae yellow, with or without black in middle, entirely yellow above; middle tibiae yellow, with or without black in middle; hind tibiae at base sometimes slightly red, with yellow sub-basally.

Head about as wide as thorax; obscurely punctate; frons and gena striate; scrobe polished, reaching front ocellus; interocellar space 2.50 times ocellar diameter; malar space about 0.40 eye; right

mandible with 3 acute teeth; scape elongate, not exceeding front ocellus, as long as segments 4-7 combined, somewhat slender in apical 0.30; pedicel slightly longer than thick; segments 1-7 subequal, slightly growing thicker; club 2 times the preceding segment.

Thorax closely, shallowly punctate, interspace weakly striate; fore wing 2.40-2.50 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 200 : 100 : 37 : 18; hind coxae closely punctate, without protuberance ventrally inside; femora 2 times as long as wide, minutely reticulately punctate, without protuberance ventrally at base, with teeth 10-12.

Abdomen somewhat pointed, a little longer than thorax, widest about middle, slightly narrower than thorax; first tergite smooth; second tergite finely closely punctate; sixth tergite rugose and with distinct microsculpture; ovipositor exserted.

Type locality : Philippines.

Distribution : India, Thailand, Singapore, B.N. Borneo, Philippines, China, Indo-China, Taiwan, Japan and Egypt.

Hosts : Cnaphalocrocis medinalis Guenee, (Pyralidae) in the Philippines, *Plutella maculipennis* Curtis (Yponomeutidae) in South India, *Grapholitha molesta* Busck (Eucosmidae) in Japan, *Compolechia metagramma* Meyerick (Gelechiidae) and *Grapholitha molesta* Bousck (Eucosmidae), and one example from an *Acacia* leaf-roller *Homona sp.* (Torticidae) in Japan.

Brachymeria excarinata plutellae Joseph, Narendran & Joy

(Fig. 71)

1972 *Brachymeria excarinata plutellae,* Joseph *et al., Tech. Bull. Commonw. Inst. Biol. Control,* 15 : 19-22.

1973 *Brachymeria excarinata plutellae,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 166.

Male : Length 1.39 mm. Body black; tegulae pale yellow; coxae, trochanters and femora brown, except the pale yellowish tip; fore tibia yellow with black externally, above and below; inside pale brownish; middle tibiae brown, with yellow at base and tip; hind tibiae brown with yellow subbasally and apically.

Head distinctly narrrower than thorax, little over 1.33 times as wide as long, rugose; scrobe almost rugulose, deep, attaining the front ocellus; parascrobal space about 0.33 of the width of scrobe; front ocellar space about 0.60 of the interocellar space, 2 times the interocellar space, a little over 5 times the ocellocular space; clypeus about 5 times as wide as long; labrum a little less than 2 times as wide as long; faint pre-orbital carina becomes abbreviated and indistinct near the malar ridge; postorbital carina absent; inter-antennal projection moderate; lateral ridges of scrobe not produced

below antennal toruli; malar space about 0.50 eye; antenna slender; scape not exceeding the front ocellus, distinctly shorter than the segments 4-6 combined, reduced beyond middle; pedicel a little thicker than long; annellus about 3.50 times as wide as long; segment 4 slightly shorter than 5; segments 5-10 subequal, becoming gradually thicker; club 2 times the tenth segment and 1.60 times as long as thick.

Thorax closely reticulately umbilicately punctate; interspace smaller and rugose; mesoscutum a little over 2 times as wide as long; parapsidal furrows distinct; scutellum hardly less wide than long, gently declivous posteriorly; apical margin explanate, rounded, with very sparse pubescence; fore wing about 2.66 times as long as wide; veins *sm m* : *pm* : *st* ratio 200 : 100 : 46 : 22; hind coxa faintly punctate, without an inner tooth; hind femur about 1 75 times as long as thick, outer side obscurely reticulate-punctate with 10 black teeth, teeth 1, 3-7 subequal, 2 small, 8 and 9 smaller and 10 smallest; inner basal tooth lacking.

Abdomen subequal to thorax, 1.66 times its own height, highest in the middle; first tergite smooth and shiny; second tergite finely, deeply shagreened; sixth tergite with 2 or 3 transverse rows of faint punctures.

Type locality Bangalore

Distribution India

Host *Apanteles plutellae* Kurdijumov (Braconidae)

Brachymeria shansiensis Habu

1961 *Brachymeria shansiensis,* Habu, *Mushi,* 35 (2) : 80-82.

1973 *Brachymeria shansiensis,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 116.

Female Length 3.20 mm. Body black; tegulae yellow with brown base; fore and middle femora reddish-black; tips yellow; hind femora with yellow tip; fore and middle tibiae yellow, reddish-brown in the middle; hind tibiae yellow in basal and apical 0.33, reddish-black in the middle.

Head a little wider than thorax, shallowly punctate; punctae irregular below on frons and sparse on genae; interocellar space 2.50 times ocellar diameter; pre-orbital carinae fine, faint below eyes, faintly depressed on outer side of each antennal socket; scrobe deep, reaching front ocellus; malar space 0.40 eye; gena without postorbital carina; antennae somewhat stout; scape not reaching front ocellus, equal to segments 4-7 combined, weakly reduced before middle; pedicel as long as thick; funicular segments 1-4 becoming gradually thicker; segment one as long as thick; segments 2-7 almost equal or slightly decreasing in length; segment 2 slightly thicker than long; segment 7 1.40 times as thick as long; club 2 times as long as segment 7, apparently 3-segmented.

Thorax closely, shallowly punctate, interspace not only faintly carinate, with distinct reticulation or striation; scutum 1.33 times as wide as long; scutellum as long as wide, rounded; fore wing 2.33 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 20 : 10 : 4 : 2; hind coxae distinctly densely punctate, without protuberance; hind femora a little less than 2 times as long as wide; matt, closely finely punctate, somewhat rugose, finely striate, without tooth near base, with 11 small teeth.

Abdomen somewhat pointed, longer than pronotum, mesoscutum and scutellum combined, widest before middle, a little narrower than thorax; first tergite finely closely punctate in the middle and rather faintly on the sides; second tergite closely finely punctate; sixth tergite with shallow punctae and microsculpture; ovipositor exserted.

Type locality : Siachitui (China)

Distribution : North China and India

Host : Unknown

Brachymeria carinata Joseph, Narendran & Joy

(Fig. 71)

1970 *Brachymeria carinata,* Joseph *et. al., Agric. Res. J. Kerala,* 8 (1) : 22-23.
1973 *Brachymeria carinata,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 113.

Female : Length 4.60-4.75 mm. Body black; tegulae pale brownish-yellow; fore and middle tibiae yellow; tarsi dull yellow.

Head as wide as thorax, about 1.33 times as wide as long, closely reticulately punctate, interspace rugose; scrobe reaching front ocellus; front ocellar space less than 0.50 of the interocellar; clypeus about 5 times as wide as long; labrum 2 times as wide as long; carina distinct; postorbital carina absent; malar space about 0.25 eye; antenna moderately stout, scape not exceeding the front ocellus, distinctly longer than segments 4-6 combined, reduced beyond the middle; pedicel as long as thick; annellus 3 times as wide as long; first funicular segment shorter than fourth; sixth and seventh segments subequal, but shorter than fifth; club a little more than 2 times as long as thick.

Thorax closely, reticulately-umbilicately punctate, interspace rugose; scutum about 1.33 times as wide as long; scutellum 1.33 times as wide as long; fore wing about 2.75 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 205 : 100 : 25 : 16; hind coxa with large and close punctae; femur about 2.60 times as long as wide, closely punctate, without an inner tooth, with a row of 11 teeth; the first tooth largest and last the smallest; hind tibia subequal to femur

Abdomen somewhat pointed, about 1.50 times thorax; first tergite large, extending to less than 0.50 of dorsum, shiny, with small

punctae; second tergite with large punctae; sixth tergite with about 6 rows of large close shallow punctae; ovipositor exserted.

Type locality : India

Distribution India and Indo-China

Host Hyperparasitic on *Psychid* on *Pithecolobium sp.*

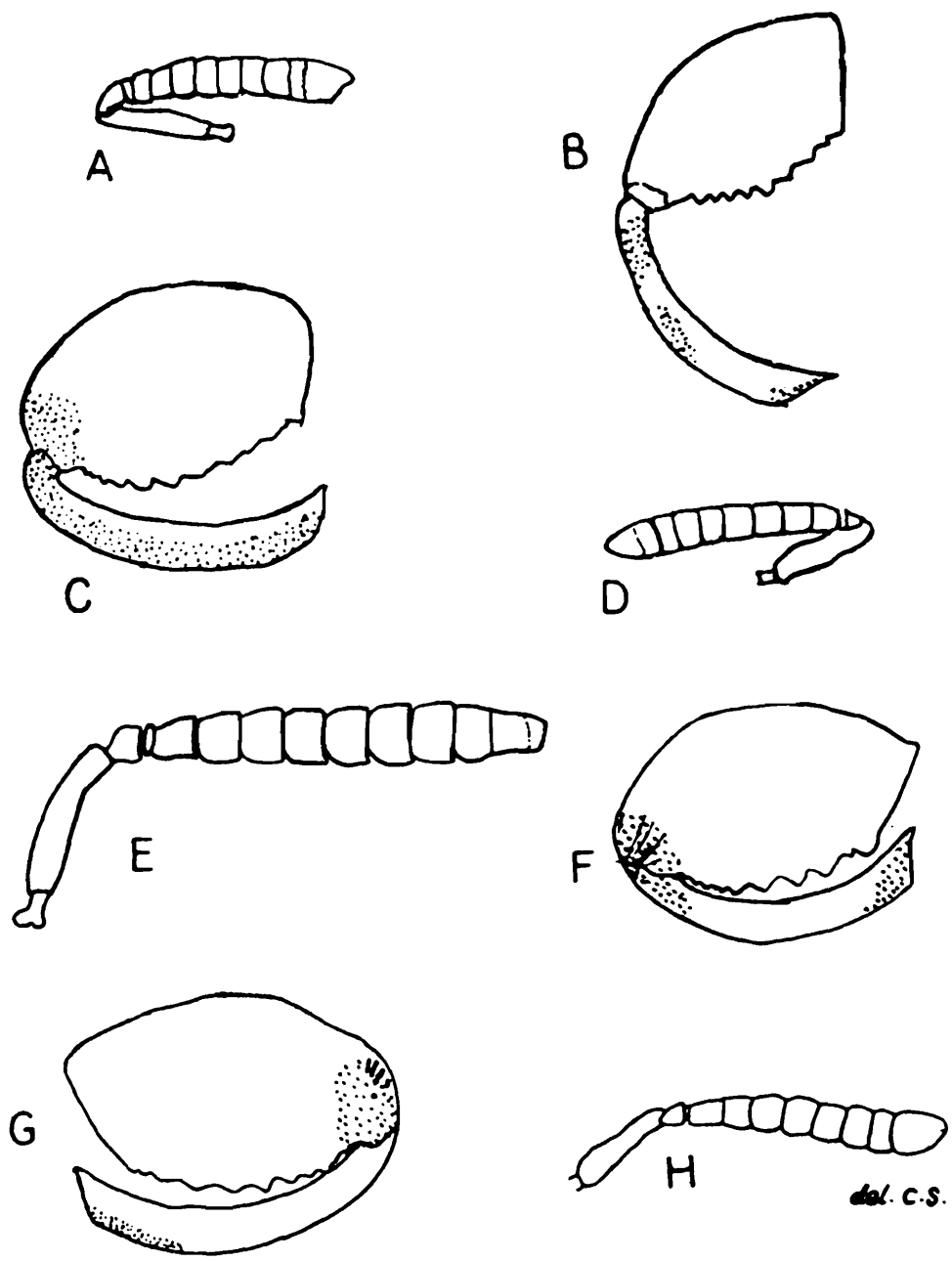

FIG. 71. A-B. *Brachymeria excarinata plutellae* Joseph *et al.*, male : A. Antenna; B. Hind femur and tibia; C-D. *Brachymeria carinata* Joseph *et al.*, female; C. Hind femur and tibia; D. Antenna; E-F. *Brachymeria secundaria* (Ruschk.), female : E. Antenna; F. Hind femur and tibia; G-H. *Brachymeria hearseyi* (Kirby), female : G. Hind femur and tibia; H. Antenna.

Brachymeria secundaria (Ruschka)

(Fig. 71)

1922 *Chalcis secundaria,* Ruschka, *Konowia,* 1 : 223.
1923 *Chalcis secundaria,* Mercet, *Rev. Fitopat.,* 1 : 15, 18.
1929 *Brachymeria tauriensis,* Masi, *Boll. Soc. Ent. Ital.,* 61 : 26-28.
1950 *Brachymeria secundaria tauriensis,* Masi, *Boll. Soc. Ent. Ital.,* 37, 46. fig. 3.
1950 *Brachymeria secundaria,* Masi, *Eos, (Extraor.)* 37 : 46.
1951 *Brachymeria secundaria,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (1) : 24.
1952 *Brachymeria secundaria,* Nikolskaya, *Opred. Fauna SSSR,* 44 : 48.
1952 *Brachymeria tauriensis,* Nikolskaya, *Opred. Fauna SSSR,* 44 : 88, 89.
1960 *Brachymeria secundaria,* Habu, *Bull. Nat. Inst. Agric. Sci.* (C) 11 : 195-198.
1962 *Brachymeria secundaria,* Habu, *Fauna Japonica,* 56-58.
1973 *Brachymeria secundaria,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 132.

Female/male : Length female 3.50 mm, male 2.50-2.75 mm. Body black; tegulae yellow, reddish-brown basally; hind trochanters faintly red; fore and middle femora dark reddish-brown, with yellow tips; hind femoral tip yellow, very slightly brown; fore tibiae dark reddish-brown with apex, base and outer side pale yellow; middle tibiae dark reddish-brown, with tip and base whitish-yellow; hind tibiae slightly red, base and tip yellow or somewhat brown.

Head slightly wider than thorax, obscurely punctate; scrobe shiny, smooth, not reaching ocellus; interocellar space a little more than 2 times ocellar diameters; pre-orbital carina absent; malar space 0.25 eyes; postorbital carina reaching posterior margin of geno-temporal region; scape not exceeding front ocellus, slightly shorter than segments 4-7 combined; pedicel almost as long as thick; funicular segments increasing in thickness apically; first segment equal to second, as long as thick; segment 2 slightly thicker than long; segment 3 shorter than segment 2; segments 3-7 equal; club 2.50 times the preceding segment.

Thorax moderately closely punctate, interspace weakly carinate; scutum 1.33 times as wide as long; scutellum rounded; propodeum without tooth at sides; fore wing 1.33 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 205 : 100 : 29 : 18; hind coxae strongly punctate, without tubercle at inner ventral side; hind femora 1.75 times as long as wide, faintly punctate, somewhat rugose, without protuberance near base, below with about 10 relatively large teeth; the first tooth largest.

Abdomen oval, subequal to thorax, widest slightly before middle, as wide as thorax; first tergite smooth; second tergite minutely and densely punctate; ovipositor exserted.

Type locality : Europe

Distribution : Europe, India, Philippines, Japan

Hosts : Rhogas sp. (Braconidae) parasitic on *Pontia daplidice* Linn. (Pieridae) and *Meteorus rubens* Nees, *Anilastus* (Ichneumonidae) Braconidae; *Rhogas* and *Meteorus.*

Brachymeria hearseyi (Kirby)

(Fig. 71)

1883 *Chalcis hearseyi,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 76.
1909 *Chalcis hearseyi,* Schmiedeknecht, *Gen. Ins.,* 97 : 27.
1973 *Brachymeria hearseyi,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 36.

Female Length 4.50 mm. Body black; tegulae yellow, except for the brown basal 0.30; fore and middle coxae, trochanters and femora brownish-black, except for the yellowish femoral tip; tibiae and tarsi yellow; hind coxa black; trochanter brownish-black; femora black with yellow tip; tibiae brownish-black, distally yellow; tarsus yellow; wings hyaline.

Head slightly narrower than thorax, a little over 1.25 times as wide as long; vertex punctate; scrobe deep, smooth, shiny, attaining the front ocellus, 1.33 times as long as wide; front ocellar space a little over 0.33 of interocellar space, which is a little over 2 times ocellar diameter and a little less than 3 times the ocellocular; clypeus a little more than 4 times as wide as long; malar space a little over 0.40 eye; antenna moderately stout, subclavate, scape not exceeding front ocellus, longer than the segments 4-6 combined; pedicel as long as thick; annellus a little over 4 times as wide as long; funicular segments gradually becoming thicker

Thorax closely, reticulately-umbilicately punctate; mesoscutum a little less wider than 1.80 times its length; scutellum as wide as long; posterior margin entire; fore wing a little more than 2.60 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 200 : 100 : 33 : 17; hind coxae smooth above, deeply punctate below, without an inner tooth; femora a little 1.60 times as long as wide, punctate, with 9-12 teeth.

Abdomen subequal to thorax; first tergite smooth and shiny; second tergite shagreened, with a row of punctae at base, sides more punctate; sixth tergite with 4 transverse rows of 10-15 punctae; ovipositor slightly exserted.

Type locality India
Distribution India
Host Pupae of an unidentified Nymphalidae

Brachymeria hearseyi var. xanthoterus Waterston

1837 *Chalcis euploeae,* Westwood, *Trans. ent. Soc. London,* 11 : 6.
1883 *Chalcis euploeae,* Kirby (*nec* Westwood), *J. Linn. Soc. London* (Zool.) 17 : 68.
1888 *Chalcis euploeae,* Cotes, *Indian Mus. Notes,* 1 : 319.
1922 *Chalcis hearseyi* var. *xanthoterus,* Waterston, *Indian Forest Rec.,* 9 (2) : 58.
1973 *Brachymeria hearseyi* var. *xanthoterus,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 33.

Female Length 3.00-4.00 mm. Body black; tegulae yellow; coxae, trochanters and femora brownish-black, except yellow tip; hind tibiae yellow, except brownish-black base; tarsi yellow.

Head somewhat narrower than thorax, about 1.25 times as wide as long; vertex distinctly punctate; scrobe smooth, slightly more than 1.33 times as long as wide, attaining front ocellus; front ocellar space about 0.33 of interocellar space; clypeus a little over 4.50 times as wide as long; pre-orbital carina absent; postorbital carina present, irregular; lateral ridges of scrobe very faintly produced below of toruli; malar space a little over 0.40 eye; antenna moderately stout; scape not exceeding front ocellus, longer than segments 4-6 combined; pedicel subglobose; annellus 5 times as wide as long; first funicular segment longest; second segment shorter; third longer than second and equal to fourth; fifth shorter than fourth and subequal to sixth and seventh.

Thorax closely reticulately-umbilicately punctate; mesoscutum 1.60 times as wide as long; scutellum as wide as long; posteriorly margined; fore wing 2.60 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 200 : 100 : 33 : 37; hind coxae smooth above, ventrally deeply punctate, without inner tooth; hind femur a little over 1 75 time as long as wide, punctate; without basal tooth; teeth 9-13; abdomen subequal to thorax; first tergite smooth and shiny; second tergite shagreened, with row of faint punctae at base above; sixth tergite with 5-7 rows of distinct punctae; ovipositor a little exserted.

Type locality : India

Distribution : India, N. Borneo, Java, Sumatra and Philippines

Hosts : Hypsipyla robusta, Psara cynaralis (Pyralidae) *Euploea core, Danaus chrysippus* (Danaidae)

Brachymeria punctifronta Joseph, Narendran & Joy

(Fig. 72)

1970 *Brachymeria punctifronta,* Joseph *et al., Oriental Ins.,* 4 (3) : 383-386.
1973 *Brachymeria punctifronta,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 65.

Male : Length 3.00-3.25 mm. Body black; tegulae yellowish-brown; tip of fore femora, tibiae and tarsi yellow with brown on inside basally; tip of middle femora, tibiae and tarsi yellow except for blackish-brown patch near base of tibiae inside; hind femora dark yellow at tip; tibiae dark yellow in basal 0.50; tarsi yellow.

Head a little wider than thorax, hardly a little more than 1.33 times as wide as long, punctate; scrobe smooth, shiny, about 1.50 times its maximum width, reaching front ocellus; lateral ridges of scrobe not continued below toruli; front ocellar space 0.50 of interocellar space; clypeus 4 times as wide as long; labrum 2.50 times as wide as long; pre-orbital carina absent; postorbital carina reaching genotemporal margin; malar space about 0.30 of eye; antenna slender; scape not exceeding front ocellus, distinctly longer than segments 4-6 combined; pedicel a little longer than thick; annellus

a little over 6 times as wide as long; first funicular segment a little longer than thick; second segment shorter than first; segment 3 a little longer and thicker than 2; segment 4 a little shorter than 3; segment 5 equal to 3; segment 6 longer than 4; segment 7 shorter than 6; segments 5, 6, 7 equally thick; club a little more than 2 times the preceding segment, about 1.60 times as long as thick.

Thorax closely, reticulately-umbilicately punctate; scutum 2 times as wide as long; parapsidal furrows distinct; scutellum a little wider than long, posteriorly weakly emarginate in the middle; fore wing a little less than 3 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 200 : 100 : 35 : 15; hind coxae distinctly punctate; hind femora a little less than 2 times as long as wide, rugose, teeth 10, tibiae shorter than femur

Abdomen subequal to thorax, a little less than 1.50 times as long as high; second tergite shagreened; sixth tergite with 4 rows of punctae.

Type locality India : Calicut

Distribution India, Indo-China, Philippines

Brachymeria semirufa (Walker)

1871 *Chalcis semirufa,* Walker, *Notes Chalcid.,* 3 : 48.

1973 *Brachymeria semirufa,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 143.

Female Length 3.70 mm. Body black; tegulae pale yellowish-brown; fore coxa brownish-black; femora dark brown except for the pale yellow tip; tibia yellow, pale brown medially in the middle; middle coxa brownish-black; femora dark brown, yellow at tip; tibia pale yellow, brown inside in the middle; tarsus yellow; hind coxa brown; femora black, yellow at tip; tibia yellow or yellowish-brown, black at base; tarsus pale yellow; abdomen red.

Head viewed above a little narrower than thorax; a little more than 1.33 times as wide as long; sculpture generally close punctae, with the interspace rugose and carinate; head viewed in front with the scrobe deep, smooth; eye a little over 2 times as long as wide; front ocellar space a little more than 0.50 of interocellar space, interocellar space about 2.33 times ocellar diameter; frons without pre-orbital carina; postorbital carina branched; scrobe ridge not produced below; malar space about 0.33 of eye. Scape not reaching front ocellus, reduced beyond the middle, equal to segments 4-6 combined; pedicel as long as thick; annellus about 4.50 time as wide as long.

Thorax closely umbilicately punctate, interspace rugose, less than the diameter of punctae; parapsidal furrows well developed; scutellum about 2.00 times as wide as long, apically rounded; fore wing about 2.20 times as long as wide, sparsely hairy basally,

otherwise normally hairy; vein *m* about 0.50 of *sm* : *pm* about 0.50 of *m* and about 2 times *st;* hind coxa moderately closely punctate; hind femora distinctly punctate, with 10 teeth.

Abdomen shorter than thorax; first tergite smooth, shiny; second tergite punctate laterally, smooth in the middle; rest finely shagreened; tergite 6 with 5 transverse rows of 4-18 punctae; ovipositor concealed.

Male : Length 3.20 mm. Tergite 6 with 5 rows of 6-20 punctae.

Type locality : Europe

Distribution : Europe, Malaya, Burma, Vietnam

Host : Papilio agamemnon

Brachymeria margaroniae Joseph, Narendran & Joy

1973 *Brachymeria margaroniae,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 108.

Female : length 4.00-5.00 mm. Body black; tips of femora, tibiae and tarsi yellow except reddish-black base of hind tibiae extending apically below.

Head equal to thorax, about 1.50 times as wide as long, punctate; scrobe deep, smooth, shiny, reaching front ocellus; front ocellar space 0.33 of the interocellar space, which is about 8 times the ocellocular and 3 times ocellar diameter; clypeus 6 times as wide as long; labrum 3 times as wide as long; pre-orbital carina faint; postorbital carina absent; lateral ridges of scrobe not produced below toruli; malar space about 0.33 eye; antennae not stout, scape not exceeding the front ocellus, longer than segments 4-6 combined.

Thorax closely, reticulately-umbilicately punctate, interspace rugose; scutum 1.60 times as wide as long; scutellum as long as wide, very slightly emarginate; fore wing a little more than 2.50 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 205 : 100 : 35 : 16; hind coxae smooth above, punctate and without tooth below; hind femora a little over 1.75 times as long as wide, without basal tooth, matt, with 11 teeth.

Abdomen shorter than thorax, a little over 1.50 times height; first tergite shagreened; second tergite with a single row of punctae at base, otherwise with fine microsculpture; sixth tergite small and with 5 transverse rows of obscure punctae.

Male : Length 3.70 mm. Sixth tergite with 2 transverse rows of obscure punctae.

Type locality : India

Distribution : India, Indo-China, Philippines

Host : Diaphania (Margaronia) indica

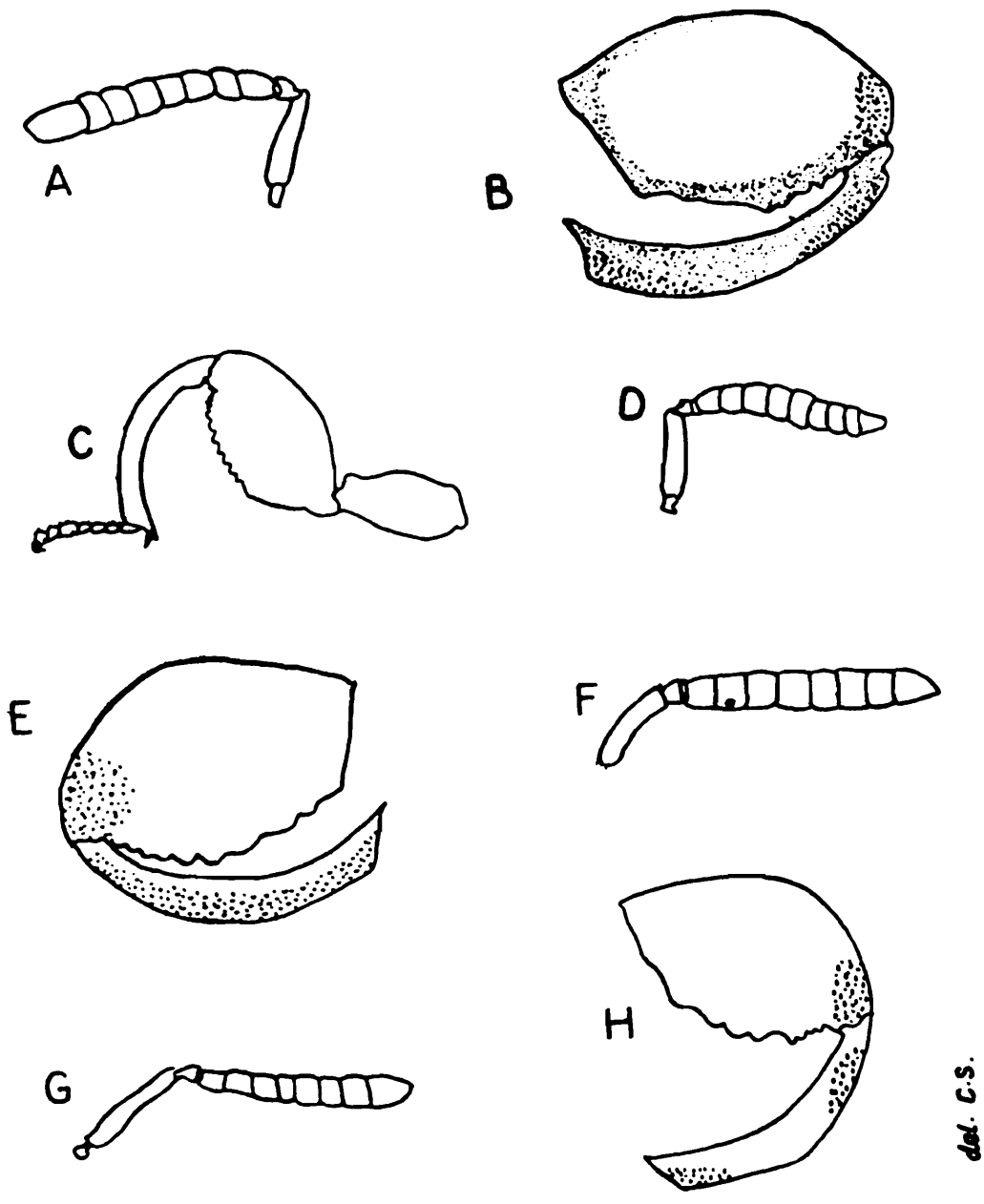

FIG. 72. A-B. *Brachymeria punctifronta* Joseph *et al.*, male : A. Antenna; B. Hind femur and tibia; C-D. *Brachymeria burksi* Chhotani, female : C. Hind femur and tibia; D. Antenna; E-F. *Brachymeria jayaraji* Joseph *et al.*, female : E. Hind femur and tibia; F. Antenna; G-H. *Brachymeria tachardiae* (Cameron), female : G. Antenna; H. Hind femur and tibia.

*Brachymeria jayaraji Joseph, Narendran & Joy

(Fig. 72)

1973 *Brachymeria jayaraji,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 110.

1977 *Brachymeria antigastralis,* Narendran, *Orient. Ins.,* 11 (3) : 394.

Female Length 3.75-4.00 mm. Body black; tegulae pale yellow; trochanters brownish-black; femora brownish-black except yellow tip; tibiae and tarsi yellow with tip brown in the latter; hind

* *Brachymeria bymantriae* Joseph, Narendran & Joy (*Bull. Ent.*, 13 : 51, 1972) may have precedence over *B. jayaraji.*

coxae tip brownish-red; trochanter reddish-brown; femora reddish-brown, except yellow tip, sometimes with a pale black patch on outer side; tibia yellowish with a ventral black carina; base somewhat brown; tarsi yellow with brownish-black tip.

Head almost as wide as thorax, a little over 1.33 times as wide as long; obscurely rugosely punctate; scrobe smooth, attaining the front ocellus; front ocellar space a little less than 0.50 of interocellar space, which latter is 3.33 times the ocellocular; clypeus about 3.50 times as wide as long; pre-orbital carina absent, postorbital carina present; malar space 0.33 eye; antenna moderately stout; scape not exceeding the front ocellus, almost equal to segments 4-6 combined, reduced beyond the middle; pedicel as thick as long; annellus 3 times as wide as long; funicular segments 1-6 subequal; segment 7 shorter; club about 2 times the preceding segment.

Thorax closely, reticulately-umbilicately punctate, interspace rugose; scutum a little over 1.75 times as wide as long; scutellum a little wider than long; fore wing a little more than 2.30 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 190 : 100 : 35 : 15; hind coxa punctate; hind femur a little less than 1.60 times as long as wide, reticulate, with 10-13 but usually 11 teeth; teeth 1-3 smaller than 4-8; 9 small; tooth 10 smaller; 11 smallest; tibia longer than femur; coxa and femur without inner tooth.

Abdomen length a little less than 1.50 times thorax; tergites one and 2 with microsculpture; tergite 6 with 5-6 transverse rows of indistinct punctae.

Male : Length 3.20-2.00 mm. Other characters as in female.

Type locality : India

Distribution India

Hosts *Parnara mathias* F., *Melanitis ismene* G.

Brachymeria tachardiae (Cameron)

(Fig. 72)

1913 *Chalcis tachardiae,* Cameron, *Indian Forest Rec.,* 4 : 93.
1915 *Chalcis tachrdiae,* Imms, & Chatterjee, *Indian Forest Mem.,* 3 : 34. pl. 7, fig. 26.
1922 *Chalcis tachardiae,* Waterston, *Indian Forest Rec.,* 9 : 58.
1924 *Chalcis tachardiae,* Hussain, *Rep. Proc. Fifth Ent. Meet. Pusa,* 35.
1935 *Brachymeria tachardiae,* Ferrière, *Bull. Ent. Res.,* 26 : 392.
1973 *Brachymeria tachardiae,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 73.

Female : Length 2.50-3.50 mm. Body black; tegulae pale yellow; coxae, trochanters and femora except for yellow tip, dark red; fore and middle tibiae yellow, reddish-brown in the middle; hind tibiae dark red with yellow subbasally and apically.

Head almost as wide as thorax, 1.25 times as wide as long; vertex closely coarsely punctate; scrobe deep, smooth, reaching front

ocellus; front ocellar space 0.50 of interocellar space, which latter is 6 times ocellocular; clypeus 6 times as wide as long; labrum 3 times as wide as long; pre-orbital carina obliterated near the malar ridge; postorbital carina faint; malar space a little less than 0.50 of eye; antennae slender; scape reaching front ocellus, distinctly longer than the segments 4-7 combined; pedicel longer than thick; funicular segments 1-7 gradually thickened apically; club a little longer than thick.

Thorax finely umbilicately punctate, space between punctae equal, though in some parts about 0.50 diameter of punctae; scutum about 1.75 times as long as wide; scutellum as long as wide; fore wing about 3 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 65 : 28 : 10 : 5; hind coxae punctate, without inner tooth; hind femora 1.80 times as long as wide, moderately punctate, teeth 10, without inner basal tooth.

Abdomen about as long as or distinctly longer than thorax; first tergite smooth; second tergite punctate at sides; sixth tergite with about 5 transverse rows of fine punctae; ovipositor distinctly exserted.

Male : Length 2.20-3.30 mm. Similar to female; abdomen shorter than thorax and rounded behind.

Type locality : Dehra Dun

Distribution : India

Hosts : Eublemma amabilis (Noctuidae) predator on lac insect; *Hypsipyla robusta* (Pyralidae), endoparasitic pupae of *Holcocera pulverea* Mayr

Brachymeria medicina Joseph, Narendran & Joy

(Fig. 73)

1970 *Brachymeria medicina,* Joseph *et al., Oriental Ins.,* 4 (3) : 289-291.
1973 *Brachymeria medicina,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 70.

Female : Length 4.00 mm. Body black; tegulae brownish-yellow, darker basally; tips of fore femora yellowish-brown; tibia mostly yellowish-brown, otherwise black; middle femoral tip brownish-yellow; tibiae brownish-yellow at base and tip, rest black; tip of hind femora yellowish-brown, rest black; hind tibiae mostly black, yellowish-brown at base and tip; tarsi brownish-yellow.

Head a little wider than thorax, 1.33 times as wide as long; closely reticulately punctate; scrobe deep, smooth, shiny about 1.50 times its own width, reaching the front ocellus; front ocellar space a little less than 0.33 of interocellar; clypeus a little less than 7 times as wide as long; labrum 2.60 times as wide as long; pre-orbital carina faint or absent; postorbital carina reaching the genotemporal margin;

malar space about 0.33 of eye; antenna stout; scape not exceeding the front ocellus, distinctly longer than segments 4-6 combined, somewhat reduced beyond middle; pedicel a little longer than thick; annellus 3.50 times as wide as long; first funicular segment distinctly longer than thick; second shorter than first; segments 3-6 subequal; segments 1-8 gradually thickened; club a little less than 2.50 times funicular segment 7, about 1.50 times as long as thick.

Thorax rugosely-umbilicately punctate, separated by more than their diameter; scutum about 1.60 times as wide as long; scutellum a little shorter than wide; fore wing about 2.75 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 195 : 100 : 30 : 15; hind coxae punctate; hind femora 1.60 times as long as wide, finely punctate, with 12 teeth; tibia longer than femur.

Abdomen a little longer than thorax; first tergite smooth, shiny, not extending beyond the middle; second tergite shagreened; sixth tergite generally rugose, with about 6 rows of punctae.

Type locality India

Distribution : India

Host : Unknown

Brachymeria nursei (Cameron)

1907 *Oncochalcis nursei,* Cameron, *J. Bombay Nat. Hist. Soc.,* 17 : 580.
1973 *Brachymeria nursei,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 45.

Female Length 4.25-5.20 mm. Body black; tegulae pale yellow; fore and middle coxae black; trochanters and femora brownish-black, except for yellowish-white femoral tip; tibiae yellowish-white with pale brown in the middle inside; tarsi brownish-yellow, with brown tip; hind coxae, trochanters and femora black, except for the yellowish-white femoral tips; tibiae yellow, with brownish-black base, extending to distal end ventrally; tarsi dark brown.

Head wider than thorax, more than 1.25 times as wide as long, punctate, with space between punctae rugose; scrobe deep, smooth, shiny, attaining the front ocellus, about 1.75 times as long as wide; front ocellar space a little over 0.33 of interocellar, which latter is a little less than 4 times ocellocular space; clypeus a little more than 6 times as wide as long; pre-orbital carina absent; postorbital carina reaching the genotemporal margin, a broad, shiny, raised, smooth plate below scrobe; lateral ridges of scrobe not produced below toruli; malar space about 0.33 of eye; antenna slender; scape not exceeding front ocellus, longer than segments 4-6 combined, reduced in apical 0.50; pedicel a little longer than thick; annellus 3 times as wide as long; first funicular segment a little over 2 times as long as thick; second and third segments subequal, but shorter than first; segment 4 shorter than 3; segment 5 shorter than 4 but equal to 6; segment 7 shorter than 6, a little more 0.50 of club.

Thorax minutely punctate; punctae close anteriorly on mesoscutum, otherwise widely spaced; scutum a little over 1.50 times as wide as long; scutellum wider than long; fore wing a little less than 3 times as long as wide; veins *sm m* : *st* ratio 210 100 35; hind coxae punctate; hind femora about 1.75 times as long as wide, with distinct shallow punctae, without inner basal tooth, 10-11 teeth below.

Abdomen a little longer than thorax and a little over 1.50 times its own height; first tergite smooth, shiny, sides punctate; second tergite distinctly punctate at base; sixth tergite with about 9 transverse rows of punctae; ovipositor slightly a little exserted.

Male Length 4.33 mm. Abdomen equal to thorax; sixth tergite with 7-8 transverse rows of punctae.

Type locality India
Distribution India
Host *Simplica robustalis* G. (Nocuidae) on cholam

Brachymeria amphissa (Walker)

(Fig. 73)

1846 *Chalcis amphissa,* Walker, *List Hymen. Brit. Mus.,* 1 : 83.
1862 *Chalcis responsator,* Walker, *Trans. ent. Soc. London,* 345-397.
1906 *Chalcis responsator,* Cameron, *J. Bombay nat. Hist. Soc.,* 17 : 94.
1909 *Chalcis amphissa,* Schmiedeknecht, *Gen. Ins.,* 97 : 26.
1909 *Chalcis responsator,* Schmiedeknecht, *Gen. Ins.,* 97 : 28.
1924 *Chalcis responsator,* Hussain, *Rep. Proc. Fifth Ent. Meet. Pusa.*
1925 *Chalcis amphissa,* Ramakrishna Ayyar, *Spol. Zeyl.,* 13 : 238.
1925 *Chalcis responsator,* Ramakrishna Ayyar, *Spol. Zeyl.,* 13 : 238.
1973 *Brachymeria amphissa,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 105.

Female/male Length female 5.00-5.25 mm, male 4.60-4.75 mm. Body black; tegulae yellow; coxae blackish-brown; fore and middle femora dark brown, with tips yellow; hind femora brownish-red with tip yellow and sometimes a pale blackish patch near the yellow; fore and middle tibiae yellow; hind tibiae yellow, with base brownish-red, extending ventrally to tip; tarsi yellow, with the tip brown.

Head wider than thorax, a little over 1.33 times as wide as long, distinctly punctate, with the interspace rugose; scrobe deep, smooth, shiny, attaining front ocellus; front ocellar space a little less than 0.50 of the interocellar, which latter is 2.60 times the ocellocular; clypeus about 4 times as wide as long; labrum a little over 3 times as wide as long; pre-orbital and postorbital carinae absent; malar space a little less than 0.25 of eye; antenna stout; scape not exceeding the front ocellus, longer than segments 4-6 combined; pedicel as long as thick; annellus more than 5 times as wide as long; first funicular segment as long as thick; second segment a little thicker than long

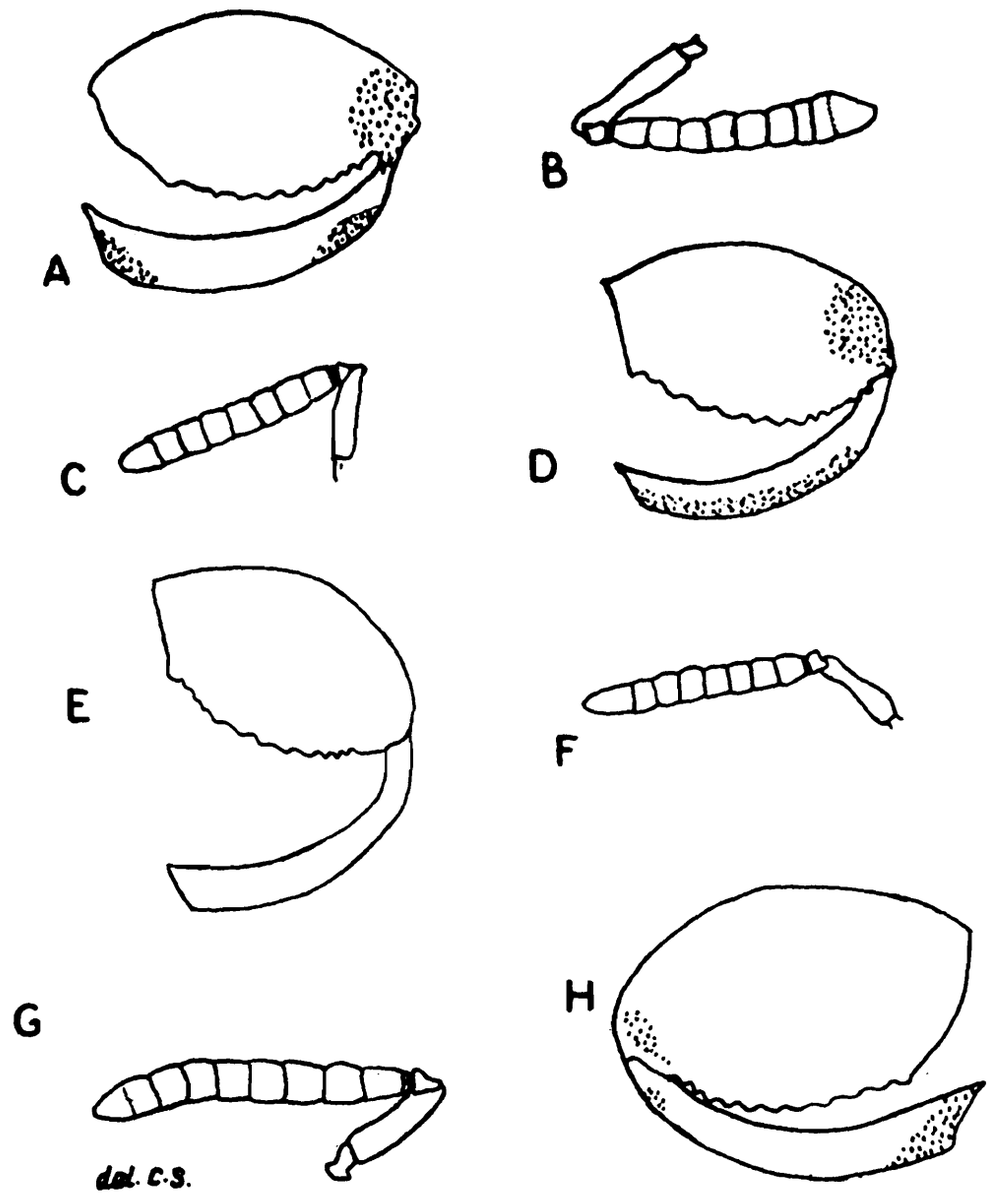

FIG. 73. A-B.*Brachymeria medicina* Joseph *et al.*, female : A. Hind femur and tibia; B. Antenna; C-D. *Brachymeria amphissa* (Walker), female : C. Antenna; D. Hind femur and tibia; E-F. *Brachymeria megaspila* (Cameron), female : E. Hind femur and tibia; F. Antenna; G-H. *Brachymeria hattoriae* Habu, female : G. Antenna; H. Hind femur and tibia.

and subequal to first; third segment a little shorter than second; fourth segment equal to third; fifth equal to third; sixth somewhat shorter than fifth and longer than seventh; club a little less than 1.50 times as long as thick and a little less than 2 times the preceding segment.

Thorax closely reticulately-umbilicately punctate, interspace rugulose; scutum a little over 1 75 times as wide as long; scutellum a little wider than long, emarginate; fore wing a little over 2.50 times

as long as wide; veins *sm : m : pm : st* ratio 160 100 : 50 : 16; hind coxa without inner tooth, punctate; femora 1 75 times as long as wide, minutely and densely punctate, with 13 teeth; inner side without a basal tooth.

Abdomen shorter than thorax; first tergite smooth dorsally; second tergite with fine setigerous punctae in the basal 0.50; sixth tergite irregularly rugosely punctate; punctae not very coarse, in about 8 rows; ovipositor not exserted.

Type locality India
Distribution India
Host : Earias sp.

Brachymeria flavipes (Panzer)

1801 *Chalcis flavipes,* Panzer, *Faun. Ins. Germ.,* 7 : 78, pl. 16.
1801 *Chalcis femorata,* Panzer, *Faun. Ins. Germ.,* 7 : 84, pl. 16.
1834 *Chalcis femorata,* Walker *Ent. Mag.,* 2 : 28.
1909 *Chalcis koebelei,* Crawford, *Proc. ent. Soc. Washington* 11 : 207.
1916 *Chalcis femorata,* Masi, *Ann. Mus. Civ. St. Nat. Genova,* 47 : 78-81.
1922 *Chalcis femorata,* Ruschka, *Konowia,* 1 : 222, 224, 225.
1923 *Chalcis femorata,* Mercet, *Rev. Fitopat.,* 1 : 14, 17.
1938 *Brachymeria femorata,* Gahan, *Proc. ent. Soc. Washington* 40 : 209.
1940 *Brachymeria koebelei,* Masi, *Mushi,* 13 : 2.
1950 *Brachymeria femorata,* Masi, *Eos,* (extra.) 36 : 43, fig. 2(14).
1950 *Brachymeria koebelei,* Masi, *Eos,* 32, 36, 43, fig. 2(13).
1951 *Brachymeria femorata,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27(1) : 21-22 figs. 12-14.
1952 *Brachymeria femorata,* Nikolskaya, *Opred. Fauna SSSR* 44 : 87.
1959 *Brachymeria femorata,* Steffan, *Cachiers des Naturalistes Bull.,* N.P. (n.s.) 15 : 35-38.
1960 *Brachymeria femorata,* Habu, *Bull. Nat. Inst. Agr. Sci., Japan* (C) 11 : 164-167.
1973 *Brachymeria femorata,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 146.

Female/male : Length female 5.50-6.50 mm, male 4.25 mm. Body black; tegulae yellow, dark reddish-brown basally; trochanters slightly red; fore femora yellow, blackish-brown at base; middle femora blackish-brown in basal 0.66, apical 0.33 yellow; hind femora with large yellow at tip, extending to the outer dorsal, base with rather long yellow patch outside below and apical patches large and united together; tibiae yellow; hind tibiae with outer ventral carina black.

Head almost as wide as thorax, distinctly punctate above, weakly in front and sides, almost smooth below scrobe; interocellar space 2.33 times the ocellar diameter; pre-orbital carina absent; scrobe relatively deep, reaching front ocellus; malar space slightly less than 0.33 of eye; scape not exceeding front ocellus, nearly as long as segments 4-6 combined, thickened in basal 0.33; pedicel nearly as long as thick; funicular segments 1-6 subequal; club 2 times as long as preceding segment.

Thorax moderately closely punctate above, interspaces less than diameter of punctae, almost smooth; scutum as wide as long; scutellum with 2 distinct lobes; fore wing 2.60 times as long as wide; veins *sm : m pm : st* ratio 160 : 100 : 40 : 18; hind coxa closely punctate, without protuberance on inner ventral side; hind femur 1.75 times as long as wide, closely punctate, not striate, punctae large, without protuberance near base, with 11-12 teeth.

Abdomen short, equal to thorax, subglobose, almost as wide as thorax; first tergite smooth; second tergite with large, close setigerous and fine punctae; sixth tergite more distinctly and densely punctate; ovipositor a little exserted.

Type locality Europe

Distribution : India, Japan, Korea, Mongolia, South China, Formosa, Burma, Siberia, Asia Minor, Europe and North Africa.

Host Aporia crataegi Linn. *Pontia daplidice* Linn., *Pieris rapae* Linn., *Pieris brassicae* Linn. (Pieridae); *Zygaena filipendulae* Linn. (Zygaenidae); *Pyrameis cardui* Linn. (Satyridae) and Nymphalidae.

Brachymeria ornatipes (Cameron)

1906 *Chalcis ornatipes,* Cameron, *J. Bombay nat. Hist. Soc.,* 17 : 290.
1925 *Chalcis ornatipes,* Ramakrishna Ayyar, *Spol. Zeyl.,* 13 : 239.
1962 *Brachymeria ornatipes,* Habu, *Fauna Japonica,* 30.
1963 *Brachymeria ornatipes,* Habu, *Mushi,* 37 (9) : 111.
1973 *Brachymeria ornatipes,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 155.

Female : Length 6.00 mm. Body black; tegulae yellow; fore and middle femora yellow in apical 0.50; hind femora yellow, with black in the middle; tibiae and tarsi yellow.

Head as wide as thorax, 1.50 times as wide as long, deeply punctate, interspace rugulose; scrobe deep, smooth, shiny, a little over 1.33 times as long as wide, reaching front ocellus; front ocellar space a little over 0.33 of the interocellar space, which latter is 2.33 times ocellocular space; clypeus about 5 times as wide as long; labrum 0.40 times as wide as long; antennae stout; scape not exceeding front ocellus, longer than segments 4-6 combined; pedicel a little thicker than long; annellus 5 times as wide as long; funicular segments 1-7 subequal; club a little less than 1.50 times its basal thickness, slightly shorter than 2 times the preceding segment.

Thorax closely, reticulately-umbilicately punctate, with the interspace smooth; scutum 1.60 times as wide as long; scutellum a little longer than wide; fore wing a little over 2.50 times as long as wide; veins *sm m : pm : st* ratio 200 : 100 : 48 : 22; hind coxae punctate, without tooth on inside; hind femora a little more than 1.50 times as long as wide, punctate, with 12-13 teeth.

Abdomen distinctly longer than thorax, about 1.25 times its height; first tergite smooth, shiny; second tergite finely punctate basally, rest finely shagreened; sixth tergite with 9-10 irregularly transverse rows of punctate medially; ovipositor not exserted.

Type locality Kashmir

Distribution India and Japan

Host Unknown

Brachymeria megaspila (Cameron)

(Fig. 73)

1906 *Chalcis megaspila,* Cameron, *J. Bombay nat. Hist. Soc.,* 7 : 581.

1973 *Brachymeria megaspila,* Joseph *et. al., Calicut Univ. Zool. Mon.,* 1 : 149.

Female Length 4.50-5.00 mm. Body black; tegulae yellow with reddish-brown at base; hind trochanter reddish-brown; fore femora yellow with blackish-brown base; middle femora blackish-brown at basal 0.60 and yellow apically; hind femora yellow or reddish-yellow, with a black patch in the middle; tibiae yellow; hind tibiae with outer ventral carina black; tarsi pale yellow.

Head a little wider than thorax, about 1.50 times as wide as long; vertex closely, deeply punctate; interspace rugose; scrobe deep, smooth, shiny, reaching front ocellus; front ocellar space 0.33 of interocellar space, which latter is 3.75 times ocellocular space; clypeus 4.50 times as wide as long; labrum about 5 times as wide as long; pre-orbital carina absent; postorbital carina reaching genotemporal margin; malar space slightly less than 0.33 of eye; antenna moderately stout; scape almost reaching front ocellus, shorter than segments 4-6 combined; pedicel a little thicker than long; funicular segments 1-4 subequal; club about 1.50 times as long as thick, a little over 2 times as long as preceding segment.

Thorax closely, reticulately-umbilicately punctate; interspace smooth except on pronotum, where it is rugose; scutum a little over 2.16 times as wide as long; scutellum as long as wide; fore wing 2.80 times as long as wide; veins *sm : m : pm : st* ratio 170 : 100 : 37 : 18; hind coxa punctate, without tooth; hind femur a little over 1.60 times as long as wide, punctate, without basal tooth; teeth 13.

Abdomen a little shorter than thorax, 1.33 times as long as wide; first tergite smooth; second tergite with large, distinct punctae in the basal 0.50; sixth tergite with 6-7 transverse rows of deep punctae; ovipositor slightly exserted.

Male Length 4.25-5.00 mm. Abdomen shorter than in female; sixth tergite with 5 transverse rows of punctae.

Type locality : India

Distribution : India, Indo-China, Java

Host : Unknown

Joseph draws attention to the difficulty in separating this species from *Brachymeria flavipes* (Panzer) *(B. femorata),* because of the similarity in the basal and apical yellow patches on hind femora being confluent outside above in the material from Korea and Mongolia, with the black in the middle diminishing in area as in *B. megaspila.* Cameron's *megaspila* may eventually prove to be a synonym of *B. flavipes* (Panzer).

Brachymeria croceogastralis Joseph, Narendran & Joy

1973 *Brachymeria croceogastralis,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 140.

Female : Length 3.75 mm. Body black; abdomen yellowish-orange; tegulae yellowish with blackish-brown base; fore coxa and trochanter blackish-brown; femur blackish-brown except the yellowish tip; tibiae yellow; middle coxa and trochanter blackish-brown; femur blackish-brown except the yellow tip; tibia yellow; hind coxa and trochanter brown; femur somewhat brown except the pale yellow tip; tibiae yellow except the brown base.

Head slightly wider than thorax, a little less than 1.50 times width; reticulately punctate, interspace rugose; scrobe smooth, shiny, sides rugulose, attaining front ocellus; front ocellar space a little more than 0.33 of interocellar space, which latter is 2.75 times ocellar diameter; clypeus 4 times as wide as long; labrum 2 times pre-orbital carina absent; postorbital carina reaching the genotemporal margin; malar space about 0.25 of eye; antenna slender; scape not exceeding the front ocellus, longer than segments 4-6 combined, reduced beyond the middle; pedicel as thick as long; annellus a little less than 4 times as wide as long; first funicular segment thicker than long; segments 3-7 subequal; club a little over 2 times the preceding segment, a little over 1.60 times thickness.

Thorax closely, reticulately, umbilicately punctate, interspace strongly rugose, 1.60 times as wide as long; scutellum a little over 1.20 times as long as wide; fore wing less than 2.50 times as long as wide; veins *sm m pm st* ratio 205 : 100 : 33 : 16; hind coxae closely punctate, with a tooth; femur a little over 1 75 times as long as wide, with close punctae and 12 teeth; first biggest, second smaller than first; teeth 3, 4, 11 and 12 equal and smaller than 5-10; tibia longer than femur

Abdomen globose, shorter than thorax, distinctly less than 1.50 times as long as high; first tergite extending to 0.50 of dorsum, smooth; second tergite with a few punctae at base; sixth tergite with 14-16 longitudinal rows of 6-7 punctae.

Type locality India

Distribution . India

Host Unknown

Brachymeria hattoriae Habu

(Fig. 73)

1961 *Brachymeria hattoriae,* Habu, *Kontyu,* 29 : 273-276.

1973 *Brachymeria hattoriae,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 135.

Female : Length 5.50-5.75 mm. Body black; scape brown to dark brown with small, elongate yellowish-brown below inside; tegulae whitish-yellow, with base brownish; fore and middle femoral tips yellow; hind femora yellow at tip; fore tibiae yellow, somewhat reddish inside; middle tibiae yellow, with black patch behind middle; hind tibiae yellow and black, base reddish-black, apical 0.33 yellow.

Head as wide as or slightly narrower than thorax, irregularly and shallowly punctate; scrobe smooth below, transversely rugose above, reaching front ocellus; pre-orbital carina absent; malar space a little less than 0.50 of eye; postorbital carina distinct, becoming indistinct before reaching hind margin of genotemporal region; antennae stout; scape stout, a little more than 2.50 times as long as thick, not reaching ocellus, equal to 1.13 of segments 4-5 combined; funicular segments 1-7 becoming somewhat shorter; club 2 times as long as the preceding segment.

Thorax closely punctate; interspaces weakly carinate; scutellum bilobed apically; fore wing 2.60 times as long as wide; veins *sm : m : pm : st* ratio 195 : 100 : 30 : 15; hind coxae closely punctate, without protuberance on inner ventral area; femora 1.75 times as long as wide; minutely contiguously punctate, punctae separated by fine carinae; with a trace of faint protuberance near base; teeth 9-11 relatively small.

Abdomen ovate, subequal to thorax, widest in the middle, a little narrower than thorax; first tergite smooth; second tergite minutely closely punctate; ovipositor exserted.

Type locality : Nurukawa; Japan

Distribution : Japan

Joseph believes that this species may be present in India and its subspecies *B. hattoriae shillongensis* is from India.

Brachymeria hattoriae shillongensis Joseph *et al.*

1973 Brachymeria hattoriae shillongensis, Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 138.

Female : Length 5.50 mm. Body black; tegulae pale yellow with brownish-black base; tips of femora brownish-yellow; fore and middle tibiae brownish-yellow with black in the middle; hind tibiae with yellowish sub-basally and apically; all tarsi brownish-yellow.

Head a little narrower than thorax, a little over 1.40 times as wide as long, closely reticulately punctate; interspace rugose; scrobe

deep, smooth, shiny with the side rugulose, attaining front ocellus; front ocellar space about 0.33 of interocellar, which latter is 2 times the ocellocular; clypeus 4 times as wide as long; labrum a little more than 2.25 times as wide as long; pre-orbital carina absent; postorbital carina branched; malar space a little less than 0.33 of eye; antenna stout; scape not exceeding front ocellus, subequal to segments 4-6 combined, slightly reduced beyond the middle; pedicel a little longer than thick; annellus 4 times as wide as long; first funicular segment longer than thick; segments 2-4 equal; segments 5-7 equal; segment 2 thicker than segment one and shorter than segment 3; segment 4 thicker than 3 and as stout as 5 and 6; segment 7 thickest; club 2 times the preceding segment and about 1.60 times as long as thick.

Thorax closely, reticulately, umbilicately punctate, interspace rugose; scutum a little over 1 75 times as wide as long; scutellum about 1.33 times as wide as long; fore wing 2.60 times as long as wide; veins *sm : m : pm : st* ratio 198 : 100 : 33 : 16; hind coxa moderately punctate, without a tooth; hind femur 1.60 times as long as wide, closely punctate, without a tooth at base; with 12 teeth; teeth 2, 3, 10 and 11 small, 12 smallest, the rest larger, subequal; tibiae longer than femur

Abdomen almost equal to pronotum, mesoscutum and scutellum combined, a little more than 1.20 times its own height; first tergite smooth and shiny; second tergite with punctae at base; sixth tergite with 7 or 8 transverse rows of punctae.

Type locality : Shillong

Distribution : India

Host : Undetermined pupa of a hairy caterpillar on some forest trees.

Brachymeria alternipes (Walker)

1871 *Chalcis alternipes,* Walker, *Notes of Chalcid,* 49.

1973 *Brachymeria alternipes,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 173.

Male : Length 4.77 mm. Body black, stout, with cinereous pubescence; fore and middle femora red at base and tip, black in the middle; hind femur red; fore and middle tibiae black with red basally and apically; hind tibia black, with base and apex red.

Head closely minutely punctate, as wide as the thorax; antennae subclavate, a little shorter than the thorax.

Thorax closely minutely punctate; pronotum subquadrate, parapsidal furrows complete; scutellum emarginate apically, with 2 minute apical teeth; propodeum abruptly decumbent; vein *m* about 0.50 of *sm; pm* much shorter than *m; st* extremely short; hind femora with several very minute teeth beneath.

Abdomen ovate, smooth, a little shorter than the thorax; first tergite large, shiny without punctae.

Female Pre-orbital carina hardly indicated; postorbital carina distinct; scrobal carinae slightly prominent except above; punctation on thorax closer than their diameter; scutellum laminate apically, produced, slightly emarginate in middle; hind tibiae blackish but merging with red basally and (very narrowly) apically.

Type locality China

Distribution South China and India

Host Unknown

Brachymeria lugubris (Walker)

(Fig. 74)

1871 *Chalcis lugubris,* Walker, *Notes on Chalcididae,* 49.
1973 *Brachymeria lugubris,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 60.
1978 *Brachymeria (Brachymeria) lugubris,* Habu, *Ent. Rev. Japan,* 32 : 113.

Female Length 5.50 mm. Body black; inner side of fore and middle tibiae and tip of hind femora blackish-brown.

Head somewhat narrower than thorax, about 1.40 times as wide as long; vertex punctate; scrobe deep, smooth, shiny, about 1.25 times as long as wide, reaching front ocellus; front ocellar space about 0.33 of interocellar space, which latter is a little over 2 times ocellocular space; clypeus a little less than 5 times as wide as long; labrum 2 times as wide as long; pre-orbital carinae distinct; postorbital carinae reaching the genotemporal margin; malar space about 0.33 of eye; antenna stout; scape not reaching front ocellus, shorter than segments 4-6 combined, reduced beyond the middle; pedicel a little thicker than long; annellus 6 times as wide as long; funicular segments 1-5 subequal; 6 a little shorter than 5 and a little longer than 7; club a little less than 1 75 times as long as thick.

Thorax closely, reticulately-umbilicately punctate; scutellum with a median longitudinal carina, apically emarginate, as long as wide; fore wing a little more than 2.75 times as long as wide; veins *sm m : pm : st* ratio 195 : 100 : 28 : 13; hind coxae smooth above, punctate below, without tooth; hind femora a little over 1.75 times as long as wide, deeply punctate, without basal tooth, ventral margin with 12 teeth.

Abdomen subequal to thorax, a little less than 1.60 times as long as high; first tergite faintly sculptured; second tergite with a few punctae at base; sixth tergite with 5 irregularly transverse rows of shallow punctae; ovipositor exserted.

Type locaity : Hong Kong

Distribution : India, Malaya, Java, Indo-China, Hong-Kong, Taiwan, Philippines.

Hosts *Atteva fabriciella* Swed. defoliating *Ailanthus excelsa.*

Brachymeria atridens (Waterson)

1922 *Chalcis atridens,* Waterston, *Indian forest Rec.,* 9 : 56.
1925 *Chalcis atridens,* Ramakrishna Ayyar, *Spol. Zeyl.,* 13 : 239.
1973 *Brachymeria atridens,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 172.

Female : Length 6.00 mm. Body black; scape narrowly at base and apex above dark brown; tegulae basally brown, apical 0.67 yellow; fore femur basal 0.67 and middle femur in 0.75 from base nearly black, brownish beyond and yellow at the extreme tip; hind femur ferruginous with a darker spot externally towards the base; fore tibia yellowish to yellow-brown, with a darker spot in middle externally; middle tibia blackish-brown, paler at base and more broadly at apex; hind tibia ferruginous with the apical 0.20-0.25 yellowish-white and the ventral edge blackish; pubescence generally whitish but yellowish at apex of abdomen.

Head as in *B. minuta* L. Pre-orbital carina slightly irregular and postorbital carina present; space below scrobe smooth; frons slightly bulging but scrobal edge not high and obliterated before the front ocellus; mandibles bidentate, teeth short and rounded.

Thorax with punctae closer than their diameter; scutellum broadly bilobed apically; no prominance or tooth dorsally behind the spiracle on propodeum; hind coxa without an inner ventro-mesal tooth; hind femur externally with well separated punctae; no basal tooth on inner side; outer ventral margin with a row of 10 teeth; the first at about 0.33 from base, followed by 2 smaller, the next 5 are subequal to the first; the first 6 teeth widely spaced; first tergite smooth and shiny; second tergite with numerous punctae at sides but in the middle single row; succeeding tergites smooth basally but with transverse rows of deep punctae apically; coarse punctae on sixth tergite fairly dense, mesad in about 6 transverse rows.

Type locality : India : Dehra Dun

Distribution : India

Host : Unknown

Brachymeria scutellocarinata Joseph, Narendran & Joy

1972 *Brachymeria scutellocarinata,* Joseph *et al., Oriental Ins.,* 6 (1) : 45-47.
1973 *Brachymeria scutellocarinata,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 54.

Female : Length 5.00 mm. Body black; tegulae yellow; fore coxae and trochanters brownish-black; femora brownish-black in basal 0.50, yellow apically; tibiae yellow; tarsi yellow, except the brown tip; middle coxae and trochanters brownish-black; femora brownish-black, except the yellow tip; tibiae yellow; tarsi yellow with tip brown; hind coxae, trochanters and femora black, except the yellow femoral tip; tibiae yellow.

Head distinctly narrower than thorax, a little more than 1.33 times as wide as long, distinctly punctate; scrobe deep, smooth, shiny, reaching front ocellus, about 1.33 times its maximum width; ridges of scrobe continued below toruli, below scrobe with a median smooth portion; front ocellar space 0.33 of interocellar space, which latter is about 2.50 times ocellocular; clypeus a little more than 6 times as wide as long; pre-orbital carina faint; postorbital carina reaching genotemporal margin; lateral malar space a little less than 0.33 of eye; antenna stout; scape not exceeding front ocellus, subequal to segments 4-6 combined; pedicel almost as long as thick; annellus about 4 times as wide as long; first funicular segment slightly wider than long, a little longer than 2, which is a little shorter than 3; segments 4 and 5 subequal; segment 6 shorter than 5 but a little longer than 7; club about 2 times last funicular segment and about 1 75 times as long as thick.

Thorax with large, rounded, reticulate-umbilicate punctae; scutum 1 75 times as wide as long; scutellum almost as long as wide, widely emarginate behind; fore wing a little over 2.50 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 200 : 100 : 35 : 16; hind coxae with shallow punctae; hind femora about 1 75 times as long as wide, with deep, close punctae, without a basal tooth, with 12 teeth; hind tibiae almost equal to hind femora.

Abdomen shorter than thorax; first tergite smooth and shiny; second tergite punctate at base, especially laterally; sixth tergite with 9 transverse rows of punctae, the basal row with about 25 punctae and apical row about 4 punctae; ovipositor slightly or not exserted.

Male Length 4.50 mm. Sixth tergite with 6 transverse rows of almost rounded punctae; the basal row with about 20 and apical row with about 10 punctae.

Type locality Java
Distribution India, Java, N. Borneo
Host Tachinid pupa

Brachymeria fiskei (Crawford)

(Fig. 74)

1910 *Chalcis fiskei,* Crawford, *Tech. Ser. U.S. Dept. Agr.* (Ent.) 19, (2) ; 14, 16-17, figs. 13, 14.
1921 *Chalcis yponomeutae,* Okamoto, *Rep. Hokkaido Agr. Exp. Stat.,* 12 : 8-9, pl. 5, fig. 12.
1932 *Brachymeria fiskei,* Ishii, *Icon. Ins. Jap.* (first edit.) 1406, fig. 4050.
1937 *Brachymeria fiskei,* Wang, *Ent. Phytop.,* 5 : 161.
1938 *Brachymeria fiskei,* Mani, *Cat. Indian Ins.,* 23 : 147
1950 *Brachymeria fiskei,* Ishii, *Icon. Ins. Jap.* (revised edit.) : 1406, fig. 4050.
1960 *Brachymeria fiskei,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan,* 11 (C) : 184-188.
1962 *Brachymeria fiskei,* Habu, *Fauna Japonica,* 48-51.
1973 *Brachymeria fiskei,* Joseph, *et al., Calicut Univ. Zool. Mon.,* 1 : 57

Female Length 7.00-8.00 mm. Body black; tegulae yellow; coxae, trochanters, femora black, with tips (and sometimes also base of fore and middle femora) yellow or brownish-yellow; fore tibiae yellow, outside black except yellow basally and apically inside somewhat brown; middle tibiae black in the middle and yellow at base and tip; hind tibiae mostly black or reddish-black, basally and apically yellow or brownish-yellow, ventrally wholly black; tarsi yellow or brownish-yellow.

Head somewhat narrower than thorax, moderately punctate; punctae somewhat shallow on gena; scrobe almost smooth, reaching front ocellus, interocellar space 2.25 times ocellar diameter; preorbital carina on each side; malar space a little more than 0.33 of eyes; postorbital carina reaching posterior margin of genotemporal region; antennae slender; scape not exceeding front ocellus, shorter than segments 4-6 combined, reduced beyond basal 0.50; pedicel a little thicker than long; first funicular segment subequal to second, as long as thick; segments 2-7 slightly thicker than long; club about 2 times the preceding segment.

Thorax closely punctate; scutum 1.15 times as wide as long, scutellum smooth in the middle; posteriorly emarginately bilobed; fore wing 2.75 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 145 : 100 : 20 : 10; hind coxae closely punctate, without protuberance on inner ventral side; hind femora about 1.60 times as long as wide, closely minutely punctate, neither rugose nor striate, shiny, with one very obtuse protuberance near base, teeth 13.

Abdomen ovate, a little longer than thorax; first tergite smooth; second tergite sparsely punctate at base and finely closely punctate apically, more closely punctate at sides; sixth tergite punctate; ovipositor exserted.

Male : Length 4.60-6.50 mm. Legs more yellowish than in female; fore tibiae with narrower and shorter black patch, middle tibiae without black but somewhat brownish inside, with smaller black patch outside; hind tibiae generally more brownish; scape relatively a little longer than segments 4-5 combined; scutellum with apical lobes less distinct than in female.

Type locality : Japan

Distribution : India, Japan and N. Borneo

Host : Tachinidae from *Lymatria dispar* Linn. in Japan, *Crossocosma* and *Tachina* (Tachinidae) parasitic on the gipsymoth, *Yponomeuta malinella* Zeller, larva *Mahasena minuscula* Butler, *Naxa seriaria* Motschulsky.

Brachymeria minuta (Linnaeus)

1762 *Vespa* sp., Geoffroy, *Hist. Abr. Insect.*, 2 : 380.

1767 *Vespa minuta*, Linnaeus, *Syst. Nat.*, (12) 1 : 952.

1775 *Vespa minuta*, Ph. L. Muller, *Linnea Vollst. Natursyst.*, 5 (2) : 887.

1785 *Vespa femocalis,* Fourcroy, *Entom. Paris,* 2 : 437.
1787 *Chalcis minuta,* Fabricius, *Mant. Insect.,* 1 : 273.
1789 *Vespa minuta,* Vellers, *C. Linnaei Entom.,* 3 : 272.
1790 *Chalcis minuta,* Gmelin, *Linne, Syst. Nat.,* (13) 1 : 2742.
1790 *Chalcis minuta,* Oliver, *Encycl. Method. Ins.,* 5 : 439.
1790 *Chalcis minuta,* Rossi, *Fauna Etrusca,* 2 : 58.
1790 *Chalcis pusilla,* Rossi, *Fauna Etrusca,* 2 : 59.
1791 *Vespa minuta,* Christ, *Naturg. Insect.,* 246.
1791 *Sphex femoralis,* Christ. *Naturg. Insect.,* 291.
1793 *Chalcis minuta,* Fabricius, *Ent. Syst.,* 2 : 195.
1796 *Chalcis minuta,* Panzer, *Faun. Insect. German,* 3 : 19.
1799 *Ichneumon minutus,* Coquebert, *Illustr. Iconogr. Insect.,* 1 : 19.
1802 *Chalcis minuta,* Walckenaer, *Faun. Paris,* 2 : 77.
1804 *Chalcis minuta,* Fabricius, *Syst. Piez.,* 165.
1805 *Chalcis minuta,* Latreille, *Hist. Nat. Crust. et Ins.,* 13 : 220.
1806 *Chalcis minuta,* Panzer, *Krit-Revis,* 2 : 98.
1807 *Chalcis minuta,* Illiger in Rossi, *Fauna Etrusca,* (2) 2 : 87.
1807 *Chalcis minuta,* Jurine, *Nouv. Meth. Class. Hym.,* 315.
1809 *Chalcis minuta,* Latreille, *Gen. Crust. Ins.,* 4 : 26.
1811 *Chalcis minuta,* Spinola, *Ann. Mus. Hist. Nat.,* 17 : 147.
1817 *Chalcis minuta,* Lamarck, *Hist. Nat. Anim. s.Vert.,* 4 : 153.
1820 *Chalcis femorata,* Dalman, *Svensk. Vet.-Akad. Handl.,* 41 : 143. Male (Excl. female)
1832 *Brachymeria minuta,* Westwood, *Phil. Mag.,* (3) 1 : 127.
1832 *Chalcis minuta,* Fonscolombe, *Ann. Sc. Nat.,* 26 : 277.
1834 *Chalcis brevicornis,* Klug, *Symb. Phys.,* Dec. 4, Pl. 37. fig. 10.
1834 *Chalcis minuta,* Walker, *Ent. Mag.,* 2 : 30.
1834 *Chalcis femorata,* Nees, *Hym. Ichn. Affin. Monogr.,* 2 : 28, 413.
1840 *Brachymeria minuta,* Blanchard, *Hist. Nat. Ins.,* 3 : 255.
1840 *Brachymeria minuta,* Westwood, *Intr. Mod. Class Ins. Synop.,* 66.
1842 *Chalcis minuta,* Audowin, *Hist. Nat. Insect. Mus.,* 183.
1849 *Chalcis minuta,* Blanchard in Cuvier, *Regne Anim.,* (3) (Insect) : 2 : 113, fig. 5.
1851 *Chalcis minuta,* Spinola in Gay, *Hist. Fis. de Chile, Zool.,* 6 : 468.
1859 *Chalcis scrobiculata,* Förster, *Verh. Nat. Ver. Preuss. Rheinl.,* 16 : 93.
1859 *Chalcis tricolor,* Förster, *Verh. Nat. Ver. Preuss. Rheinl.,* 16 : 98.
1860 *Chalcis minuta,* Dumeril, *Mem. Acad. Sc. Paris,* 31 : 959.
1865 *Chalcis minuta,* Disconzi, *Entom. Vicent.,* 134.
1875 *Chalcis femorata,* Thomson, *Hym. Skand.,* 4 : 18.
1881 *Chalcis minuta,* Ed. Andre. *Ann. Soc. Ent. France* (6) 1 : T.9, fig. 5.
1881 *Chalcis minuta,* S. Saunders, *Proc. Trans. ent. Soc. London,* 24.
1883 *Chalcis minuta,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : pl. 4, fig. 45, 46.
1898 *Chalcis minuta,* Dalla Torre, *Cat. Hym.,* 5 : 390.
1904 *Chalcis minuta,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 409.
1909 *Chalcis minuta,* Schmiedeknecht, *Gen. Ins.,* 97 : 27.
1910 *Chalcis minuta,* Crawford, *Tech. Ser. U.S. Dep. Agric. Ent.,* 19 (2) : 14, 18, figs. 19-21.
1910 *Chalcis paraplesia,* Crawford, *Tech. Ser. U.S. Dep., Agric. Ent.,* 19(2) : 14, 19, fig. 22, 23.
1912 *Chalcis jezoensis,* Matsumura, *Thousand Insects of Japan,* (suppl.) 4 : 166-167, pl. 52, fig. 15. Syn. Nov.

1916 *Chalcis pusilla,* Masi, *Ann. Mus. Civ. St. Nat. Genova,* (3) 7 : 89-92, pl. 12. fig. 2.
1916 *Chalcis minuta,* Masi, *Ann. Mus. Civ. St. Nat. Genova,* (3) 7 : 92-96, pl. 12, fig. 4.
1916 *Chalcis minuta,* var. *alborufa,* Masi, *Ann. Mus. Civ. St. Nat. Genova,* (3) 7 : 94-95, pl. 12, fig. 7.
1922 *Chalcis minuta,* Ruschka, *Konowia,* 1 : 224, 231-232.
1923 *Chalcis minuta,* Mercet, *Rev. Fitopat.,* 1 : 16-17, 19.
1929 *Brachymeria brevicornis,* Masi, *Mem. Soc. Ent. Ital.,* 8 : 119.
1932 *Brachymeria paraplesia,* Ishii, *Icon. Ins. Jap.,* (first edit.) : 347, fig. 675.
1938 *Brachymeria paraplesia,* Mani, *Cat. Indian Ins.,* 23 : 57.
1949 *Brachymeria minuta* var. *alborufa,* Masi, *Bull. Soc. Ent. Ital.,* 79 : 92.
1950 *Brachymeria minuta pusilla,* Masi, *Eos,* (extra.), 79 : 35, 40.
1950 *Brachymeria minuta,* var. *alborufa,* Masi, *Eos.* (extra.), 79 : 35, 41.
1950 *Brachymeria scrobiculata,* Masi, *Eos,* (extra.), 79 : 35, 41-42.
1951 *Brachymeria minuta,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (suppl.) 1 : 19, 20, 28-29, figs. 11, 25, 26.
1952 *Brachymeria minuta,* Nikolskaya, *Opred. Fauna SSSR,* 44 : 89.
1956 *Brachymeria minuta,* Boucek, *Bull. Res. Council Israel,* 5 (B) : 232.
1960 *Brachymeria minuta,* Habu, *Bull. Nat. Inst. Agr. Sci.* (C) 11 : 146-151.
1961 *Brachymeria (Brachymeria) minuta,* Habu, *Mushi,* 35 : 79.
1962 *Brachymeria minuta,* Habu, *Fauna Japonica,* 15-19.
1971 *Brachymeria putturensis,* Joseph *et al., Orien. Ins.,* 5 (2) : 229.
1971 *Brachymeria putturensis longigastralis,* Joseph *et al., Orient. Ins.,* 5 (2) : 232.
1973 *Brachymeria minuta,* Joseph *et al. Calicut Univ. Zool. Mon.,* 1 : 83.

Female : Length 4.00-6.75 mm. Body black; tegulae yellow, with pale brown margin; trochanters somewhat reddish; femora with whitish-yellow tips; fore tibiae brownish-yellow, white basally; middle tibiae whitish-yellow at base and tip; hind tibiae yellow or brownish-yellow sub-basally and apically, rarely wholly brownish; lateral and posterolateral margins of tergites slightly red.

Head a little narrower than thorax; rugosely separately punctate; scrobe almost smooth, reaching front ocellus; interocellar space 2.40 times ocellar diameter; pre-orbital carina indistinct near the malar ridge; malar space 1.50 times eye; postorbital carina reaching posterior margin of genotemporal region; right mandible with 2 obtuse teeth; antennae stout; scape not exceeding front ocellus, a little shorter than segments 4-6 combined, slightly reduced before middle; pedicel almost as long as thick; segments 2-7 becoming a little shorter and thicker apically; segment 2 equal to the first, a little thicker than long; club more than 2 times the preceding segment.

Thorax moderately punctate; pronotum smooth, except for faint microsculpture; scutum 1.20 times as wide as long, distinctly emarginate and bilobed; propodeum with an obscure tooth behind spiracles; fore wing 2.60 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 200 : 100 : 40 : 13; hind coxae punctate, without protuberance on inner ventral side; hind femur 1.75 times as long as wide, sparsely punctate, with one small blunt tooth near base, with 11-13 teeth below.

Abdomen somewhat longer than thorax, widest before middle; first tergite smooth; second tergite with distinct microsculpture except basally and apically and at side; sparsely minutely punctate at base; sixth tergite finely punctate, with some microsculpture; ovipositor exserted.

Male Length 3.75-5.50 mm. Scape sometimes with yellow near base; antennae sometimes thick like in female.

Type locality Europe

Distribution Europe, Siberia, Mongolia, Manchuria, Korea, Japan, Philippines, China, Cambodia, Indo-China, Taiwan, Middle Asia, Turkey, N. Africa, India, Java, Borneo.

Host Diptera : *Sarcophaga lineata, Sarcophaga* sp. Calliphoridae, Tachinid puparia from nests of *Yponomeuta malinella* Zeller

Brachymeria minuta calopeplae Joseph, Narendran & Joy

(Fig. 74)

1972 *Brachymeria calopeplae,* Joseph *et al., Indian Forester,* 98 (9) : 554-556.
1973 *Brachymeria minuta calopeplae,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 88.

Female Length 4.00-4.90 mm. Body black; tegulae yellow; scape with a yellow patch ventrally on outer side in the basal 0.75; fore and middle coxae, trochanters and femora brownish-black except the yellow distal ends of femora; tibiae yellow with a brown patch in the middle; hind femora black with almost apical 0.50 yellow; tibiae yellow with pale red base and middle, and extending from base to tip along the ventral margin.

Head almost as wide as thorax, a little less than 1.50 times its own length, closely, deeply punctate; scrobe deep smooth, shiny, reaching front ocellus; front ocellar space a little over 0.33 of interocellar space, which latter is a little over 2 times the ocellocular space; clypeus 4 times as wide as long; labrum about 3 times as wide as long; pre-orbital carinae distinct; postorbital carina present; malar space 0.33 of eye; antenna stout; scape reaching front ocellus, longer than segments 4-6 combined; pedicel as long as thick; annellus about 5 times as wide as long; club a little thicker than long, a little more than 2 times as long as last funicular segment.

Thorax umbilicately punctate, punctae separated by their own diameters in the middle of scutum, scutellum and scapulae, closer elsewhere; scutum 1.50 times as wide as long; scutellum a little wider than long, deeply emarginate with 2 lobes; fore wing a little more than 2.50 times as wide as long; veins *sm* : *m* : *pm* : *st* ratio 200 : 100 : 33 : 16; hind coxae without tooth at base, deeply punctate; hind femora 1.60 times as wide as long, with 11-13 teeth; inner side with a tooth at base.

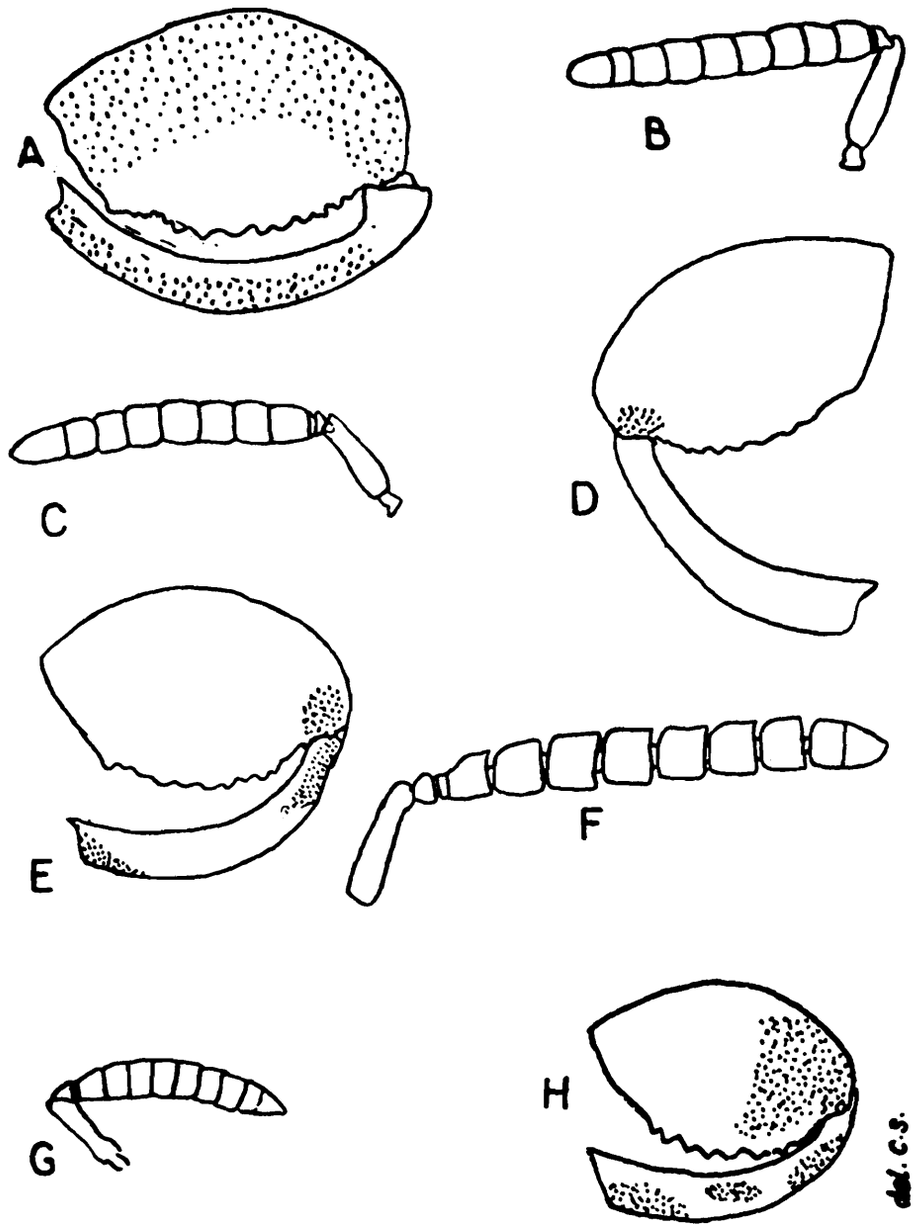

FIG. 74. A-B. *Brachymeria bengalensis* Cameron, female : A. Hind femur and tibia; B. Antenna; C-D. *Brachymeria lugubris* Walker, female : C. Antenna; D. Hind femur and tibia; E-F. *Brachymeria fiskei* Crawford, female : E. Hind femur and tibia; F. Antenna; G-H. *Brachymeria minuta calopeplae* Joseph *et al.*, female : G. Antenna; H. Hind femur and tibia.

Abdomen acutely produced, distinctly longer than thorax; first tergite smooth, with a few punctae on sides; second tergite smooth or faintly shagreened with a few punctae; sixth tergite with 5 transverse rows of punctae; ovipositor well exserted.

Male : Length 4.75 mm. Abdomen distinctly shorter than thorax; sixth tergite with 5 transverse rows of punctae.

Type locality : Dehra Dun

Distribution India

Host : Calopella leayana

Brachymeria fulvitarsis (Cameron)

1906 *Chalcis fulvitarsis,* Cameron *J. Bombay Nat. Hist. Soc.,* 17 : 94.
1922 *Chalcis fulvitarsis,* Waterston, *Indian Forest Rec.,* 9 : 56.
1973 *Brachymeria fulvitarsis,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 80.

Male Length 3.50-3.75 mm. Body black; tegulae yellow; tip of femora rufo-fulvous; fore and middle tibiae rufo-fulvous at base and tip and brownish-black in the middle; tarsi rufo-fulvous; hind tibiae with a sub-basal yellow spot and an apical yellow patch, otherwise brownish-black; tarsi brownish-yellow.

Head a little wider than thorax, about 1.33 times as wide as long; deeply punctate; scrobe deep, slightly rugose, reaching front ocellus; front ocellar space a little more than 0.33 of interocellar space, which latter is about 3 times the ocellocular; clypeus a little less than 5 times as wide as long; labrum a little less than 2.50 times as wide as long; pre-orbital carina abbreviated near the malar ridge; postorbital carina reaches the genotemporal margin; frons deeply punctate; malar space more than 0.33 of eye.

Thorax umbilicately punctate, separated by their own diameter; scutum 0.60 as wide as long; scutellum slightly wider than long, apically slightly emarginate; fore wing a little less than 3 times as long as wide; veins *sm m* : *pm* : *st* ratio 205 : 100 : 32 : 15; hind coxae punctate below, without a tooth, smooth above; femur a little less than 2 times as long as wide, with sparse widely separated obscure punctae, without a basal tooth, below with 11 teeth.

Abdomen distinctly longer than thorax, 1 75 times as long as wide; first tergite smooth; second tergite faintly shagreened; sixth tergite with 3 transverse rows of punctae; the basal row with about 16 punctae; middle row with about 12 punctae and the apical row with about 9 punctae.

Type locality Quetta

Distribution India and Pakistan

Host Lac insect

Brachymeria podagrica (Fabricius)

1784 *Chalcis podagrica,* Fabricius, *Mantissa Insectorum* 1 : 272.
1834 *Brachymeria podagrica,* Walker, (Nec Fabricius), *Ent. Mag.,* 2 : 31-32.
1834 *Chalcis podagrica,* Walker (Nec Fabricius), *Ent. Mag.,* 2 : 31-32.
1841 *Chalcis fonscolombei,* Dufour, *Ann. Soc. Ent. France,* 10 : 11-19, pl. 1, fig. 11.
1846 *Chalcis alphius,* Walker, *Ann. Mag. Nat. Hist.,* 17 : 108.
1846 *Chalcis xerxena,* Walker, *List. Hym. Brit. Mus. Chalcid.,* 1 : 83.
1868 *Brachymeria pulchripes,* Holmgren, *Eugen. Resa. Ins.,* 436.
1871 *Chalcis mansueta,* Walker, *Notes Chalcids,* 3 : 48.
1883 *Chalcis callipus,* Kirby, *J. Linn. Soc. London* (Zool) 17 : 75.
1888 *Chalcis mikado,* Cameron, *Proc. Manch. Lit. Phil. Soc.,* 36 : 1-2.

1904 *Chalcis borneanus,* Cameron, *J. R. Asiatic Soc.,* 42 : 50.
1909 *Chalcis pulchripes,* Schmiedeknecht, *Gen. Ins.,* 97 : 28.
1910 *Chalcis fonscolombei,* Crawford, *Tech. Ser. U.S. Dept. Agr. Ent.,* 19 (2) : 15, 20.
1910 *Chalcis callipus,* Crawford, *Tech. Ser. U.S. Dept. Agr. Ent.,* 19 (2) : 15, 20.
1916 *Chalcis neglecta,* Masi, *Ann. Mus. Civ. St. Nat. Genova,* 7 (3) : 82-84, pl. 12, fig. 3.
1951 *Brachymeria neglecta,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (1) : 18, 20, fig. 147.
1951 *Brachymeria fonscolombei,* Muesebeck, Krombein & Townes, *Agr. Mon. U.S. Dept. Agr.,* 2 : 587.
1952 *Brachymeria neglecta,* Nikolskaya, *Opred. Faune SSSR,* 44 : 90.
1954 *Brachymeria fonscolombei,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 29 : 78, 79.
1960 *Brachymeria fonscolombei,* Burks, *Trans. Amer. ent. Soc.* 86 : 238-239.
1972 *Brachymeria fonscolombei rufoflagellata,* Joseph *et al., Oriental Ins.,* 5 (2) : 236-239, 239-242.
1973 *Brachymeria podagrica,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 96.
1973 *Brachymeria fonscolombei,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 91.
1979 *Brachymeria fonscolombei,* Krombein *et al.,* Hymen N. America, 1 : 871.

Female : Length 4.50-7.00 mm. Body black; scape more or less brown or red; funicle sometimes faintly reddish; tegulae almost white or yellowish; base reddish-black; hind coxae reddish in apical 0.50; trochanters brownish or reddish; fore and middle femora shiny black, sometimes reddish, apically creamy-white hind femora brownish-red, light reddish, entirely or partially black, tip white or yellowish-white; fore and middle tibiae shiny, sometimes faintly reddish; basal and apical parts white or yellowish-white, fore tibiae dorsally white; hind tibiae shiny black, with one small whitish or yellowish patch before base dorsally and with one large whitish or yellowish patch at tip; sometimes also reddish and blackish.

Head almost as wide as thorax, 1.20 times as wide as long; thorax 1.20 times as wide as long, moderately punctate; frons with a small smooth area in middle below scrobe; scrobe almost smooth, reaching front ocellus; front ocellar space about 0.33 of interocellar space; interocellar space 1.40 times ocellar diameter and 2.20 times ocellocular space; pre-orbital carinae generally reaching frontogenal sutures; malar space 1.50 times eyes; postorbital carina reaching posterior margin of genotemporal region (sometimes becoming faint); antennae stout; scape not exceeding front ocellus, equal to segments 4-7 combined, somewhat reduced in apical 0.33; pedicel almost as long as thick; first funicular segment almost as long as thick; segments 2-7 becoming gradually thicker and shorter; segment 3 a little shorter and thicker than segment one; club more than 2 times as long as preceding segment.

Thorax distinctly punctate; punctae generally becoming somewhat larger and sparse behind; scutum almost as wide as long; scutellum emarginate, bilobed at apex; propodeum with one tooth at side behind spiracles, protuberance sometimes rather sharp; fore wing about 2.60 times as long as wide; veins *sm* : *m* : *pm* *st* ratio

200 : 100 : 30 : 18; hind coxae closely punctate, without protuberance on inner ventral side; femora about 2 times as long as wide, sparsely minutely punctate, with one small protuberance near base, with 9-11 large, acute teeth.

Abdomen somewhat pointed a little longer than thorax, widest in the middle; first tergite smooth; second tergite with sparse minute punctae basally except in the middle, punctae somewhat denser and larger laterally; sixth tergite shallowly punctate; ovipositor exserted.

Male : Length 3.75-5.00 mm. Legs somewhat darker and antennae usually less stout than in female.

Type locality : Europe

Distribution India, Nepal, Middle Asia, Mongolia, Siberia, China, Philippines, Taiwan, Thailand, Malaya, Java, Indo-China, N. Guinea, B.N. Borneo, Bote-Tobaga Is., Japan, Korea, Europe, Africa, North America, New Jersey to Florida and West Indies.

Hosts This is a primary parasite of Sarcophagidae, Calliphoridae, Muscidae, Trypetidae (Diptera) Psychidae, Yponomeutidae and Lymatriidae (Lepidoptera)

Boucek in a MS note in his 1951 paper considers *Brachymeria fonscolombei* of authors as synonym of *Brachymeria dalmani* (Thomson)

Species Incertae Sedis

Brachymeria deesae (Cameron)

1907 *Oncochalcis deesae,* Cameron, *J. Bombay Nat. Hist. Soc.,* 17 : 581.
1938 *Oncochalcis deesae,* Mani, *Cat. Indian Ins.,* 23 : 49.

Characters in key :

"Middle of face without a smooth shining, clearly defined plate; temples very short, underside of hind femora thickly covered with silvery pubescence."

Type locality Bombay

Brachymeria deesensis (Cameron)

1905 *Oncochalcis deesensis,* Cameron, *Z. Hym. Dipt.,* 5 : 285.
1938 *Oncochalcis deesensis,* Mani, *Cat. Indian Ins.,* 23 : 49.

Type locality Bombay

Brachymeria jambolana Gahan

1920 *Tumidicoxoides jambolana* (Girault MS), Ramakrishna Ayyar, *Proc. Third Ent. Meet. Pusa,* 323.

1923 *Tumidicoxoides jambolana,* Ramakrishna Ayyar, *Rep. Third Ent. Meet. Pusa,* 933.

1925 *Tumidicoxoides* sp., Ramakrishna Ayyar, *Spol. Zeyl.*, 13 : 245.

1938 *Tumidicoxides* sp., Mani, *Cat. Indian Ins.*, 23 : 147.

1940 *Tumidicoxoides* sp., Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 5.

1942 *Brachymeria jambolana,* Gahan, *Proc. US Nat. Mus.*, 92 (31, 30).

Female : Length 4.25 mm; very similar to *B. euploeae* Westwood but slightly smaller; ocellocular space subequal to ocellar diameter; flagellar segments, except the first, slightly thicker than long; absence of tubercle on coxa, fore and middle tibiae immaculate yellow. This species is also similar to *B. albotibialis,* but differs in the tooth near base of hind femora being smaller; punctae on mesonotum and scutellum narrowly separated; shorter flagellar segments and by the shorter black band on base of hind tibia.

Body black; flagellum dark brown or black; apical 0.50 of hind femora apical 0.33 of middle femora, a large spot on tip of hind femora, fore and middle tibiae, tarsi, hind tibia yellow; hind tibia with a narrow black band at extreme base; wings hyaline; postorbital branch of genal carina well developed; thorax coarsely contiguously punctate; scutellum with a weakly emarginate plate in the middle; propodeum irregularly rugose; abdomen ovate; first tergite smooth but hairy at the sides; other tergites weakly shargeened; penultimate tergite with weak, fine punctae; hind femora with 10-12 blunt teeth of which 3 near base are shorter; vein *pm* 2 times the *st.*

Type locality : Coimbatore

Host : Carea subtilis, defoliating *Eugenia jambalana*

Brachymeria marginiscutis (Cameron)

1907 *Oncochalcis marginiscutis,* Cameron, *J. Bombay Nat. Hist. Soc.*, 17 : 168.

1938 *Oncochalcis marginiscutis,* Mani, *Cat. Indian Ins.*, 23 : 49.

Type locality India

Brachymeria quettaensis (Cameron)

1906 *Oncochalcis quettaensis,* Cameron, *J. Bombay Nat. Hist. Soc.*, 17 : 94.

1938 *Oncochalcis quettaensis,* Mani, *Cat. Indian Ins.*, 23 : 50.

Male/female : Length 5.00 mm. "Black; the apical two-thirds of the fore femora, the apical third of the middle and the fourth of posterior, the tibiae, tarsi and tegulae bright lemon yellow, the wings clear hyaline, the nervures black. Densely covered with long, glistening white pubescence, except on the base of the abdomen.

Apex of scutellum with a broad, rounded, smooth and shining, undivided projection. Metanotum stoutly, widely reticulated. The central basal area fully twice longer than wide; the sides rounded, not toothed. Femora with 12 teeth; the basal close together, the apical (except the penultimate, which is smaller and less clearly defined) larger and more widely separated. Basal segment of abdomen smooth and shining; the second sparsely and not very strongly, the others strongly and closely punctured. Centre of face strongly, but not closely punctured above, the lower part smooth and shining; the sides strongly and closely punctured, more or less reticulated, this being also the case with the sides of the front and vertex; middle of front widely, deeply excavated, very smooth and shining, bare. Hinder ocelli separated from each other by more than double the distance they are from the eyes. The antennal scape and pedicel are shining, sparsely haired; the other joints opaque, stout, the third is narrowed at the base, twice the length of the pedicel and not much longer than the fourth, the apical joints are brownish. Pro-mesonotum and scutellum strongly, closely punctured. Upper part of propleurae smooth, obscurely striated; the lower strongly, but not closely punctured. Meso and metapleurae coarsely, reticulated-punctured; the greater part of the base smooth, shining; of the former, the extreme base is bordered (except near the top) with a row of large foveae, the one below the other The inner side of the hind tibiae is black. Parapsidal furrows shallow, broad.

Comes near to *C. marginata,* Cameron, the latter species has the abdomen much less strongly punctured; the mesopleurae much more distinctly striated; there is only a small smooth space in the centre of the face and all the femora have the apices narrowly yellow, the yellow marks being of the same size on all of them. It is a larger and stouter species; the metanotal areola is longer, acutely pointed above and with a stout keel near the middle, and the reticulations on the apex of the metapleurae are wider *O. deesae,* Cameron is also closely allied; the smooth space on the face is very small; the structure of the metanotal area is very different; there is no large central areola; there is a row of large basal area; the abdominal segments in *deesae* are not punctured.

This species is not unlike *C. bilobatus,* Cameron, that species may be known by the weaker femoral teeth; by the mesopleurae being only weakly striated above; by the face being more strongly punctured, the middle being also punctured, and by the much more strongly and regularly reticulated metanotum on which the areola is clearly defined, deep and triangular; and the sides do not project into a blunt tooth behind; in the present species they project into a broad, rounded tooth."

Type locality Quetta

Brachymeria rotundata (Cameron)

1905 *Oncochalcis rotuniata,* Cameron, *Z. Hym. Dipt.,* 5 : 231.
1938 *Oncochalcis rotundata,* Mani, *Cat. Indian Ins.,* 23 : 50.

Type locality : Quetta

Brachymeria rufescens (Cameron)

1906 *Oncochalcis rufescens,* Cameron, *J. Bombay Nat. Hist. Soc.,* 17 : 95.
1938 *Brachymeria rufescens,* Mani, *Cat. Indian Ins.,* 23 : 50.

Female : Length 5.00 mm. "Rufescent densely covered with silvery pubescence; the vertex darker coloured, infuscated; the pleurae brighter in tint than the mesonotum; tegulae, apical half of fore femora, apical fourth of the 4 hinder, the 4 anterior tibiae and tarsi, and the posterior tibiae, except for a rufous band near the middle, pale bright yellow; the hind tarsi yellow, ringed with fulvous; wings clear hyaline, the costal nervure fuscous, the others black.

Head closely, rugosely punctured. Frontal depression smooth, shining, not quite so wide as the sides, there is a thick, smooth, wide keel on the centre, bordered on either side by an oblique, somewhat pyriform, raised smooth and shining space. Pro-mesothorax and scutellum closely strongly punctured; the scutellum large somewhat broader than long, the apex broadly rounded above, projecting and bluntly bilobate above, the apex is more densely haired than the rest. Metanotum short, vertical, shining, widely reticulated, the central area long, extending from the top to the bottom, sharply, obliquely narrowed above; the bottom slightly roundly narrowed. Propleurae closely, minutely punctured, a stout oblique keel below the middle. The upper part of the mesopleurae at the base is smooth; in the centre are 5 round, deep foveae, its apex is raised, it being thus separated from the posterior part, which is depressed above, raised below and stoutly irregularly straited, or keeled at the base. Metapleurae reticulated closely; their sides behind broadly rounded. Abdomen closely minutely punctured, the second and following segments densely covered with a longish silvery pile. The ovipositor is broad; it projects slightly beyond the top of the apical dorsal segment. Hinder femora closely serrate, pilose below."

Type locality : Quetta

Host Earias sp.

Brachymeria tarsalis Motschulsky

1863 *Brachymeria tarsalis,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 38, 39, 40.
1906 *Chalcis ashmeadi,* Schmiedeknecht, *Spol. Hymen.,* 150.
1909 *Chalcis tarsalis,* Schmiedeknecht, *Gen. Ins.,* 97 : 28.
1925 *Chalcis tarsalis,* Ramakrishna Ayyar, *Spol. Zeyl.,* 13 : 238.
1973 *Brachymeria tarsalis,* Joseph *et al., Calicut Univ. Zool. Mon.,* 1 : 175.

Female : Length about 3.18 mm. Hind femur black, 0.12 of tip light yellow; hind tibia brownish-black with obscure brown base; distally a yellow marking occupies about 0.14 or 0.20 of the length; distal 0.25 of hind tibia light yellow.

Head broader than pronotum, as broad as or a little less broad than mesonotum measured at the level of tegulae; malar space in the middle with a thin longitudinal carina starting from the lower eye margin and reaching the lateral mouth margin.

Thorax densely punctate, pronotum transverse; mesonotum rather narrow and triangular with the apex of scutellum rounded; hind femur with a basal tooth on the inner side; the distance from this tooth to the base of femur and the distance from this tooth to the apex of femur in the ratio 3 : 7; outer ventral margin of hind femur with a row of minute teeth.

Abdomen subconical; first tergite smooth, shiny; second tergite reticulate, with small pits; abdomen hairy on the sides and on the posterior part.

Type locality : Sri Lanka

Distribution : Sri Lanka

Host : Unknown

Trigonura Sichel

1865 *Trigonura,* Sichel, *Ann. Soc. Ent. France,* 5 : 376.
1904 *Trigonura,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 249, 250.
1909 *Trigonura,* Schmiedeknecht, *Gen. Ins.,* 97 : 22.
1912 *Bactrochalcis,* Kieffer, *Ann. Soc. Ent. France,* 80 : 463.
1913 *Centrochalcis,* Cameron, *Indian Forest Rec.,* 4 : 92. (preoccupied in *Centrochalcis* Cameron, 1905).
1923 *Trigonura,* Waterston, *Indian Forest Rec.,* 9 : 60.
1923 *Centrochalcidea,* Gahan & Fagan, *Bull. U.S. Natl. Mus.,* 124 : 28.
1938 *Trigonura,* Mani, *Cat. Indian Ins.,* 23 : 50.
1959 *Trigonura,* Burks, *Ann. ent. Soc. Amer.,* 52 : 75-81.
1979 *Trigonura,* Krombein *et al.,* Hymen. N. America, 1 : 869.

Closely related to the genus *Phasgonophora* but, abdomen broader and less compressed; first tergite very long, equal to the remaining tergites combined; abdominal terminal process not compressed but triangular; antennae with 11 segments, slightly thickened apically; hind femur in male with 6 stout teeth; the first funicular segment shorter than scape.

Type-species : Trigonura crassicauda Sichel.

Key to Species

1	Head and pronotum deeply umbilicately punctate, punctae contiguous on pronotum	*T ruficaudis* (Cameron)
	Head and pronotum coarsely punctate	*T tenuicaudis* Waterston

Trigonura ruficaudis (Cameron)

(Fig. 75)

1913 *Centrochalcis ruficaudis,* Cameron, *Indian Forest Rec.*, 4 : 92.
1922 *Trigonura ruficaudis,* Waterston, *Indian Forest Rec.*, 9 : 60.
1973 *Trigonura ruficaudis,* Mani & Dubey, *Mem. School Ent.*, 2 : 2.

Female : Mean length 6.10 mm; range 5.50-7.00 mm. Body ferruginous-red; head black; eyes grey; ocelli dark brown; antenna reddish-brown; mesothorax and scutellum, except for the black disc, ferruginous-red; mesopleura and propodeum black; hind femoral teeth and inner carina of tibia black, otherwise ferruginous-red; wings hyaline, veins brownish-black.

Head densely clothed with long silvery-white setae; viewed from above length to width 100 : 45; head width to thorax width 100 : 98; ocellocular space 0.75 of ocellar diameter, interocellar space about 4 times the ocellocular space, front ocellar space 1.50 times the ocellocular space; vertex with small, contiguous punctae; viewed in front length to width 81 : 100; face with large, contiguous, deeply umbilicate punctae; scrobe with a fine; short, median carina below and transversely striate; mandible tridentate; viewed from side length to width 100 : 60; gena 0.70 of eye; antenna inserted a little below lower orbital border, slender, about equal to 2 head lengths, segments 12; scape about 0.25 of antenna, about 9 times its own thickness; pedicel globose, about 0.33 of the first funicular segment; annellus minute, about 2 times as thick as long; first funicular segment longest, segments 2-5 subequal, each segment slightly shorter than the first; sixth and seventh subequal; club slightly shorter than the preceding 2 segments combined; 2-segmented basal club segment slightly larger than terminal segment, nearly 2.50 times as long as thick.

Pronotum transverse, about 0.33 times as long as wide, about 0.25 of the length of the thorax, with large contiguous umbilicate punctae; mesonotum with complete parapsidal furrows, punctae large, distinctly separated from each other, punctation reticulate behind, scutellum with very large, contiguous punctae, except behind where punctae setigerous; fore wing length : width 100 : 37; veins *sm* : *m* : *pm* ratio 385 : 100 : 65; fore femur moderately stout; tibia slender, subequal to femur; tarsus slightly shorter than tibia; metatarsus 0.30 of tarsus; second segment 0.70 of metatarsus, third segment 0.60 of the second; fourth slightly shorter than third; fifth segment 2 times the preceding; middle femur clavate; tibia subequal to femur, slender; tarsus slightly shorter than tibia; metatarsus 0.30 of tarsus, second segment 0.70 of metatarsus, third 0.80 of the second, fourth 0.70 of the third; fifth 2 times the preceding; hind leg clothed with silvery-white pubescence; coxa about 3 times its own thickness; femur stout, about 1.25 times coxa and 1 70 times its own thickness; tibia curved, a little longer than femur;

tarsus 0.60 of tibia; metatarsus 0.20 of tarsus; second segment slightly shorter than metatarsus; third subequal to the second; fourth 0.70 of the third; fifth 2.50 times the preceding.

Abdomen 0.57 of body, slightly over 2 times the width; first tergite smooth, shiny, except for obscure, scattered, minute punctae; tergite 2-5 smooth, shiny, posterior 0.50 with setigerous punctae.

Type locality Dehra Dun

Distribution Sri Lanka; India : Bengal, Punjab, Raipur; Pakistan : Lahore.

Host *Chrysobothris* in company with *Glenea* and *Derolus dissicollis* and *Diorthus simplex* attacking *Heritiera fomes* in the Sunderbans (Bengal).

Trigonura tenuicaudis Waterston

(Fig. 75)

1922 *Trigonura tenuicaudis,* Waterston, *Indian Forest Rec.,* 9 : 62.
1973 *Trigonura tenuicaudis,* Mani & Dubey, *Mem. School Ent.,* 2 : 4.

Female Length 9.50; abdomen and ovipositor 6.50 mm. Head, pronotum in middle, rest of thorax except narrowly at the side of the middle lobe of mesothorax, abdomen and apical 0.50 of the ovipositor black; pronotum mainly rufous side of middle; tegulae brown, basally darker; scape, pedicel, last 3 funicular segments and club black; rest rufous; wing brown to dark brown; stigma, femora and tibia black; knees, tarsi rufous; inside of femora pale; setigerous tergite, more than basal 0.50 of ovipositor rufous; hind femur with 11 teeth; abdomen to ovipositor 100 : 88; head and pronotum with coarser punctae than in *ruficaudis;* fore wing length : width 100 : 35; veins *sm* : *m* : *pm* *st* ratio 500 : 100 : 40 : 60; abdomen smooth, shiny, except where setae are found, base of ovipositor (seventh visible tergite) with numerous large setigerous punctae at basal 0.33, beyond dull and reticulate.

Type locality Dehra Dun

Distribution Dehra Dun

Host Unidentified larva feeding on *Acacia catechu*

Stenochalcis Masi

1929 *Stenochalcis,* Masi, *Boll. Lab. Ent. Bologna,* 2 : 155.
1938 *Stenochalcis,* Mani, *Cat. Indian Ins.,* 23 : 51.
1960 *Stenochalcis,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan,* (C) 11 : 213.

Head viewed from side appearing swollen, a little wider than high when viewed from front; antennae inserted fairly above the level of lower orbital border, carinately margined scrobe; frontoclypeal

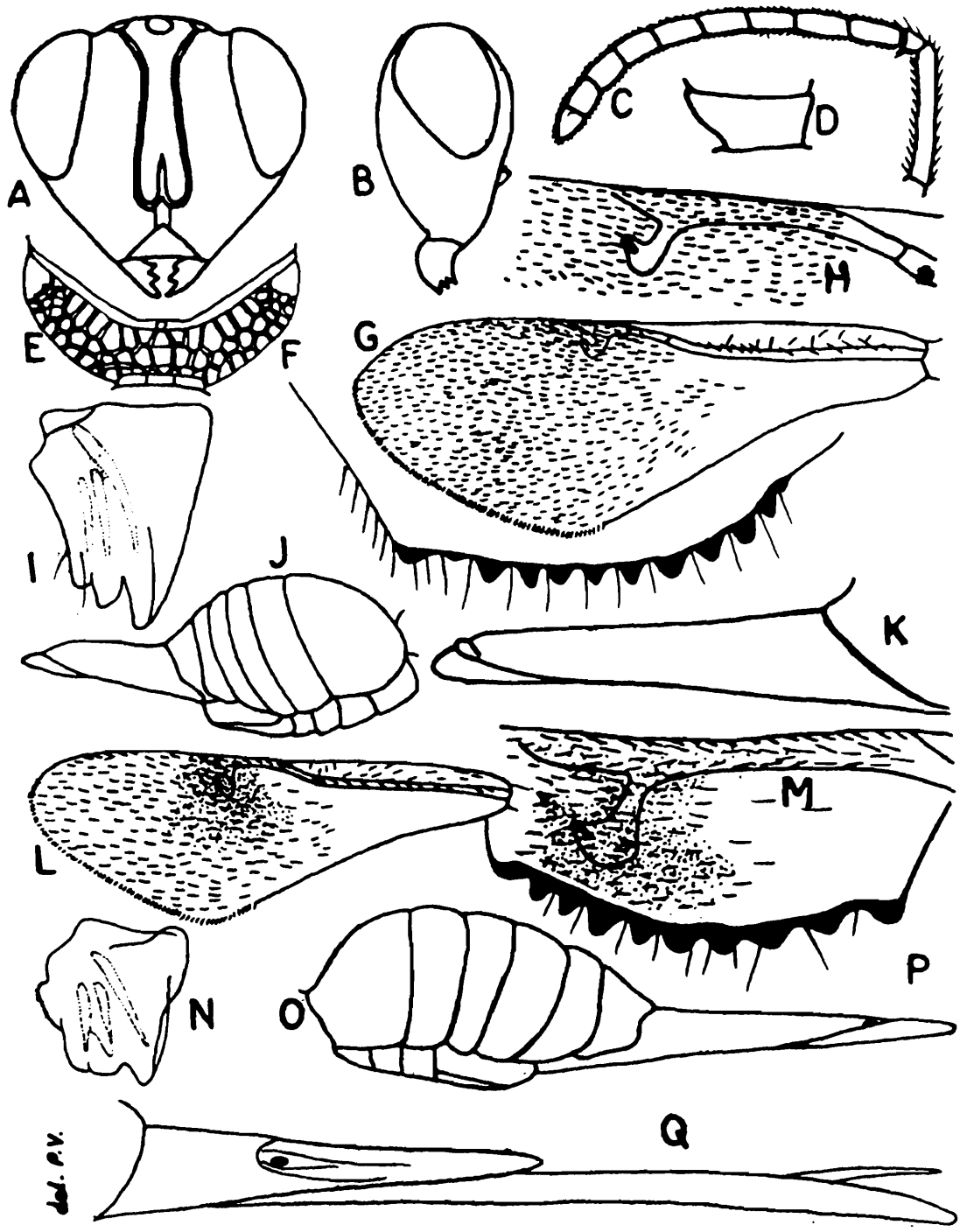

FIG. 75. A-K. *Trigonura ruficaudis* (Cameron), female : A. Head in front view; B. Head in profile view; C. Antenna; D. Annellus; E. Propodeum; F. Hind femur; G. Fore wing; H. Stigmal area of fore wing; I. Mandible; J. Abdomen; K. Tip of abdomen; L-Q. *Trigonura tenuicaudis* Waterston, female : L. Fore wing; M. Stigmal area of fore wing; N. Mandible; O. Abdomen; P. Hind femur; Q. Tip of abdomen.

suture and postclypeus distinct; anticlypeus distinct but small; mandibles short, stout; antennae with a long annellus; thorax narrow, long; scutellum not strongly bifid, not pointed apically; head and thorax umbilicately punctate; propodeum carinate, irregularly

enclosing large deep areas; fore wings with vein *pm* not very long; hind femora with several large teeth; hind tibiae distinctly spinously produced apically; abdomen elongate-ovate; terminal segment distinctly produced behind; abdomen with 6 tergites, including epipygium; second tergite inconspicuous.

The genus is closely related to *Trigonura* and is separated by the vertex impressed longitudinally in continuation of the scrobes; cylindrical flagellum, large pronotum, convex mesonotum; fore wing with vein *m* short.

Type-species *Stenochalcis quadridentata* Masi

Stenochalcis quadridentata Masi

1929 *Stenochalcis quadridentata,* Masi, *Boll. Lab. Ent. Bologna,* 2 : 157.
1938 *Stenochalcis quadridentata,* Mani, *Cat. Indian Ins.,* 23 : 51.

Female : Length 4.00 mm. Body generally black; thorax with golden-yellow setae; labrum, mandibles and antennae castaneous; propleura, tegulae, abdomen below and sides, legs reddish-brown; fore tibial tip and tarsi pale brown; fore wings pale brown.

Head viewed from side stout, oval, width about 0.72 of length, obliquely truncate below, face tumid, ocellar area prominent; head viewed from the front about 0.84 times as high as wide; antennae inserted above level of lower orbital border; scrobe about 0.33 of width of face, slightly deep, with straight lateral margin continuing above and the median carina meeting in front of the front ocellus; head viewed from above with the ocellar triangle raised, interocellar space slightly more than ocellar diameter and ocellocular space about 3 times ocellar diameter; eyes glabrous; face with setigerous umbilicate punctae; scape extending slightly beyond front ocellus; pedicel subglobose, as long as thick; annellus as long as thick, constricted basally; funicular segments gradually becoming shorter, the seventh being subquadrate.

Pronotum long, but shorter than scutum; parapsidal furrows not very distinct; sculpture as on head; sides of pronotum smooth, shiny; propodeum subequal to pronotum, slightly declivous, with the median area ovate-lanceolate, and apex forwards; mesopleural fovea large elliptic, transversely striate, deep; metapleura wide, fovea umbilicate below and unsculptured above; fore wings with veins *sm* : *m* : *pm* : *st* : ratio 100 : 46 : 5 : 6.5; hind coxae elongate-pyriform, femora elliptic, armed below with large, triangular teeth, with the surface sparsely shallowly covered with setigerous punctae; hind tibiae robust, curved, slightly thickened basally and apically; tarsi; slender; metatarsus long, segments 1-4 shorter; abdomen slightly longer than thorax, with the terminal segment elongate-ovate; first tergite occupying about 0.42 of the dorsum; second tergite often concealed; tergites 3-5 shorter and subequal; penultimate tergite

conical, with setigrous punctae, compressed, carinate above; tip rounded, with stiff setae; ovipositor slightly exserted.

Type locality : India : Assam

Distribution Assam

SUBFAMILY DIRHININAE

1904 *Dirhinini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 257.
1909 *Dirhinini,* Schmiedeknecht, *Gen. Ins.,* 97 : 65.
1927 *Dirhinini,* Masi, *Eos,* 3 : 29.
1947 *Dirhinini,* Masi, *Eos,* 23 : 39-78.

Head with frons above produced forward into horns; scrobes deep between the horns; antennae inserted a little below the lower orbital border just above clypeus; fore wings without vein *pm;* hind tibiae produced apically into an acute point, tibial spur absent; abdominal petiole not very long, not laminate in front, distinctly separated behind from the front margin of first tergite; abdomen in female generally more or less pointed behind; first tergite usually with some longitudinal carinae basally.

Dirhinus Dalman

1818 *Dirhinus,* Dalman, *Svensk. Vet.-Akad. Handl.,* 39 : 75.
1823 *Dirrhinus,* Dalman, *Analecta Ent.,* 29.
1883 *Dirhinus,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 57.
1883 *Eniaca,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 54, 57.
1904 *Dirhinus,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 257.
1909 *Dirhinus,* Schmiedeknecht, *Gen. Ins.,* 97 : 66.
1912 *Dirrhinoidea,* Girault, *Arch. Naturg.,* (A) 78 (9) : 165.
1913 *Pareniaca,* Crawford, *Proc. US Nat. Mus.,* 45 : 312.
1913 *Eniacella,* Girault, *Bull. Wisconsin Nat. Hist. Soc.,* 11 : 35.
1919 *Dirhinus,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 43 : 23.
1923 *Dirhinus,* Rohwer, *Philip. J. Sci.,* 22 : 346.
1927 *Pareniaca,* Masi, *Eos,* 3 : 39.
1927 *Dirhinus,* Masi *Eos,* 3 : 42.
1938 *Dirhinus,* Mani, *Cat. Indian Ins.,* 23 : 65.
1938 *Pareniaca,* Mani, *Cat. Indian Ins.,* 23 : 66.
1947 *Dirhinus,* Masi, *Eos,* 23 : 39.
1951 *Dirhinus,* Boucek, *Acta Ent. Mus. Nat. Pragae,* (Suppl. 1) 27 : 34.
1960 *Dirhinus,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan,* (C) 11 : 309, 316.
1979 *Dirhinus,* Krombein *et al.,* Hymen. N. America, 1 : 862.

Frontoclypeal suture absent; mandibles long, straight; eyes small; antennae with 12-13 segments, inserted far above the mouth border; slightly thickened apically; head strongly incised in front to form paired horns above; scrobe reaching ocellus; thorax flattened; scutellum rounded behind; fore wing with vein *m* clavate; propodeum

coarsely, reticulately rugose, with lateral teeth behind, with median and submedian carinae, areola not reaching hind margin; abdominal petiole stout, short, longitudinally carinate, with 4-6 carinae; first abdominal tergite occupying more than 0.50 of dorsum and basally longitudinally striate; ovipositor concealed.

Species parasitize Diptera, especially Trypetidae, Glossinidae, Muscidae, Sarcophagidae and Tachinidae.

Type-Species *Dirhinus excavatus* Dalman

KEY TO SUBGENERA

1. Horns rounded at tip; frons without tooth on the outer margin of scrobe. *Dirhinoides* Masi
   Horns with 1-2 teeth at tips. 2
2. Horns with 2 teeth at tip; frons without tooth on outer margin of scrobe below the tips of horns. *Dirhinus* Dalman
   Horns with one acute tooth at tip; frons with secondary tooth on outer margin of scrobe below the tips of horns. *Hontalia* Cameron

KEY TO SPECIES

1. Head viewed from side trapezoid, the sides being parallel up to about 0.33. 2
   Head viewed from side not trapezoid, but ovate-triangular sometimes semilunar in outline. 5
2. Head viewed from side short, about 1.50 times as long as high. 3
   Head viewed from side at least 2 times as long as high. 4
3. Inner margin of horns slightly raised compared to the outer; head viewed from above with the sides converging; annellus in female subquadrate; first 3 funicular segments subquadrate; first tergite with 15-20 sulci in the anterior 0.33. *D. hesperidum* (Rossi)
4. Petiole in female about 2 times as long as thick; first tergite with longer sulci and 15 in number, with a minutely punctigerous area; wings tinted. *D. excavatus* Dalman
5. Margin of scrobe more or less concavo-arcuate in front of front ocellus. 6
   Margin of scrobe substraight and converging in front of front ocellus to form an inverted V; head in side view semilunar in outline, height about 0.48 of length; first tergite with about 20 sulci limited by a raised line to demarcate a posterior punctate area *D. giffardii* Silv.
6. Head viewed from side about 0.66 as long as its length above. 7
   Head viewed from side about 0.72 as long as its length above. .. *D. caelebs* Masi

7. Abdomen 0.44 of body; first tergite with 12 sulci — *D. intermedius* Mani & Dubey
   Abdomen 0.32 of body. — 8
8. First tergite with 8 sulci in front and 16 posteriorly — *D. georgei* (Mani & Dubey)
   First tergite with 8 sulci reaching 0.40 of tergite — *D. pambaeus* Mani & Dubey

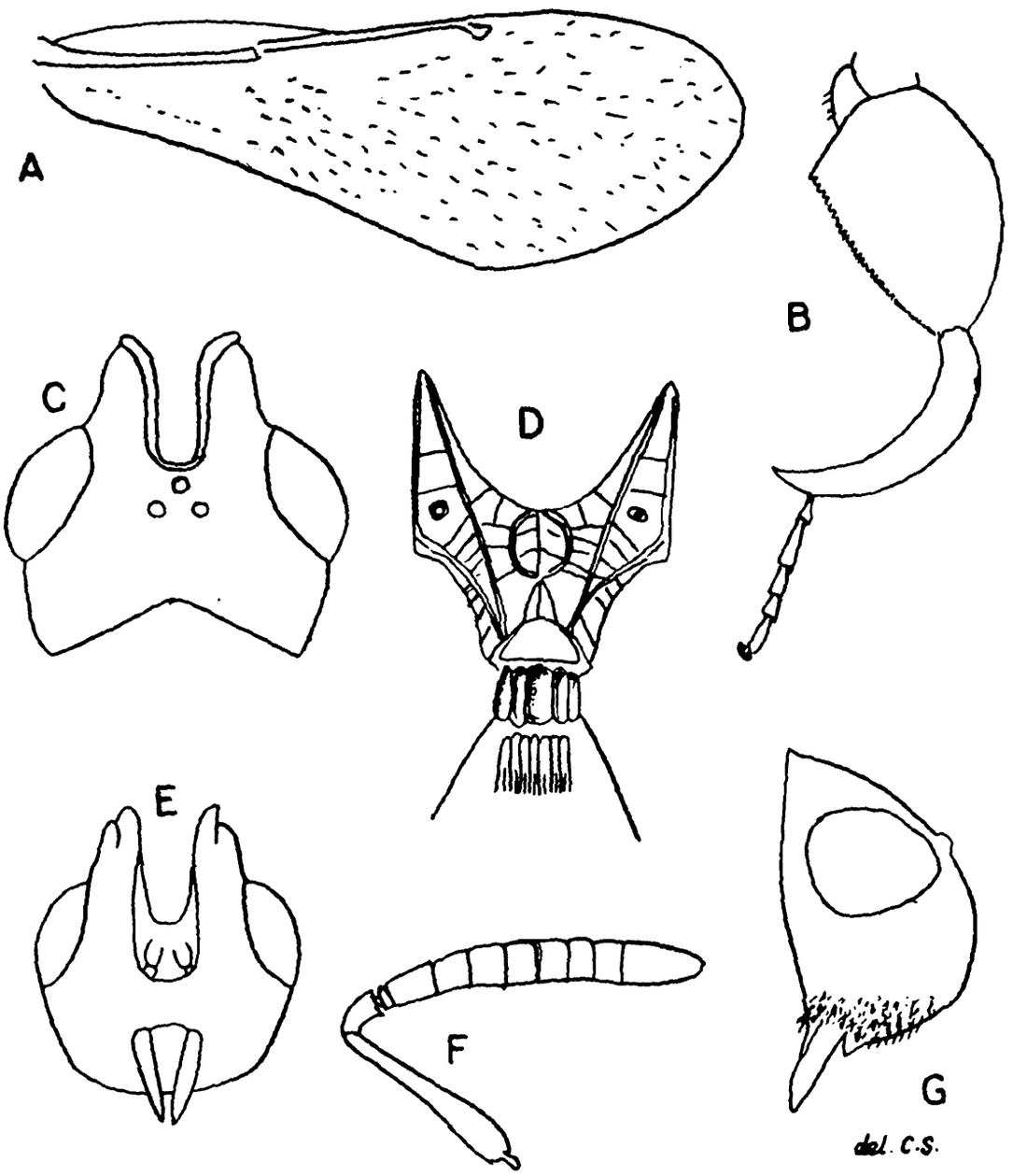

FIG. 76. *Dirhinus intermedius* Mani & Dubey, female : A. Fore wing; B. Hind leg; C. Head in dorsal view; D. Propodeum and first abdominal tergite; E. Head in front view; F. Antenna; G. Head in lateral view.

*Dirhinus (Dirhinus) georgei Mani & Dubey

(Fig. 77)

1974 *Dirhinus georgei*, Mani & Dubey, *Mem. School Ent.*, 3 : 31.

* This species may prove to be synonym of *D. anthracia* Walk.

Male Length 4.25 mm. Body black; eyes, ocelli brownish-black, antenna ferruginous-brown, except the brownish-black apical 2 funicular segments and club; fore and middle legs ferruginous-brown, hind tarsi brown, wing hyaline, vein dark brown.

Head viewed from above length to width 100 : 94, as wide as thorax, ocellocular space slightly over ocellar diameter, interocellar space subequal to ocellocular space, front ocellar space subequal to ocellar diameter, front ocellus contiguous with the upper border of the scrobe; horns length to width 100 : 48, with outer and inner margins elevated; viewed from side length to width 100 57, postorbital space to maximum eye diameter 67 : 100; infra-orbital space subequal to maximum eye diameter; antennae slender, 0.46 of body, with segments 13 : 1.1.1 7.3; scape 0.36 of antenna, nearly 7 times as long as thick; pedicel 0.15 of scape; annellus 4 times as wide as long; first funicular segment 1.40 times pedicel, second segment subequal to first, third and fourth segments subequal, segments 5-7 subequal; club slightly shorter than preceding 3 funicular segments combined.

Pronotum almost 3 times as wide as long, closely umbilicately punctate; mesonotum slightly wider than long, anteriorly transverse, smooth; scutellum as wide as long; propodeum rugose, areola meets the convex posterior margin, median carina not extending beyond; fore wing length to width 100 : 37; veins *sm : m* ratio 88 : 100, *pm* absent *st* sessile; hind coxa 2 times as long as wide, femur about 1.50 times coxa, length to width 100 : 65, with fine serration below; tibia almost equal to femur, tarsus nearly 0.50 of tibia, metatarsus 0.14 of tarsus; second segment 1.50 times metatarsus, third segment 0.70 of the second, fourth 0.70 of the third, fifth 2.20 times the fourth.

Abdomen to body ratio 32 : 100; length to width 100 : 54, petiole quadrate, with 5 narrow sulci; large tergite with 8 sulci anteriorly and 16 posteriorly, tergite to sulci 100 : 44.

Type locality : Achankovil (Cardamum Hills)

Dirhinus (Dirhinus) hesperidum (Rossi)

1790 *Chrysis hesperidum,* Rossi, *Fauna Etrusca,* 2 : 100.
1807 *Chalcis cornigera,* Jurine, *Nouv. Meth. Class. Hym.,* 315.
1834 *Dirhinus hesperidum,* Nees, *Hym. Ichneum. Affina,* 2 : 36.
1834 *Dirhinus cornigerus,* Walker, *Ent. Mag.,* 2 : 38.
1846 *Dirhinus hesperidum,* Walker, *List Chalc.,* 7.
1863 *Dirhinus imperialis,* Giraud, *Verh. zool.-Bot. Ges. Wien,* 13 : 1309.
1883 *Eniaca hesperidum,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 57, pl. iii, fig. 18.
1909 *Eniaca hesperidum,* Schmiedeknecht, *Gen. Ins.,* 97 : 67.
1919 *Dirrhinus hesperidum,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* (3) 8 : 143.
1921 *Dirrhinus hesperidum,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* (3) 9 : 177.
1923 *Eniaca hesperidum,* Rohwer, *Philip. J. Sci.,* 22 : 346.
1947 *Dirhinus hesperidum,* Masi, *Eos,* 23 : 54, 57.

1951 *Dirhinus hesperidum,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 27 (Suppl.) (1) 35-36, fig. 33-36.

1956 *Dirhinus hesperidum,* Boucek, *Bull. Res. Council Israel* 5(B) : 250.

1960 *Dirhinus (Dirhinus) hesperidum,* Habu, *Bull, Nat. Inst. Agric. Sci. Japan,* (C) 11 : 316.

Female : Length 3.50-5.10 mm. Body black; antennae reddish-black; tip of club reddish-brown; thorax black, shiny; tegulae reddish-brown to dark brown; wings brown; veins reddish-brown; coxae black; fore and middle trochanters brown; hind trochanter black; fore and middle femora dark reddish-brown, except for the brown base and tip; hind femora black; fore and middle tibiae reddish-brown; hind tibiae black; tarsi brown to reddish-brown, except for the darker tips of the fifth segment; abdomen black, shiny; general pubescence silvery-white to golden-yellow.

Head viewed above almost as wide as thorax and as wide as long, with close punctae, interspaces between the punctae finely carinate; horns parallel, about 0.42 times as long as head and 2 times as long as wide, inner margin of horns almost parallel to nearly 0.50 of their length, beyond which the horns diverging outward, moderately reflexed; the inner tooth protruding a little beyond the outer; the outer tooth slightly broadly rounded; ocellar area raised, surrounded by curved weak carinae on the outer side of lateral ocelli; head viewed from side subtrapezoid, about 1.66 times as long as wide; genotemporal furrow weak; head viewed from below narrow; eyes convex, glabrous; antennae inserted a little below the lower orbital borders; interocular space with a slight pre-orbital carina on each side; scrobe not angulate and not bordered; mandibles with 2 rounded obtuse teeth, the inner tooth long, with a small obsolete tooth; antennae moderately thickened apically; scape equal to the following 7 segments combined, slightly expanded basally; pedicel slightly constricted basally, 2 times as long as thick; annellus about 0.50 of pedicel; funicular segments 1-7 gradually becoming thicker and shorter; first segment equal to pedicel and about 0.33 times as long as thick; second funicular segment as long as thick; segment 7 about 1.50 times as long as first and about 2 times as long as thick; club about 1.50 times as long as the preceding 2 segments combined; triarticulate, pointed at tip; thorax distinctly closely punctate, punctae partly confluent on pronotum and scutum; pronotum with a narrow space without punctae behind; scutellum usually with median longitudinal, somewhat convex narrow area, without punctae; parapsidal furrows deep; scutellum as long as wide; propodeum short, median longitudinal carina short in areola, submedian carinae distinct, sublateral carinae distinct; areola slightly longer than wide; lateral costae with 2 teeth; fore wings slightly more than 2.66 times as long as wide; vein *m* about 1.20 times the *sm;* hind coxa about 0.60-0.66 as long as hind femora, smooth narrowly above, rugose outside above, distinctly punctate below inside; hind femora about 1 75 times as long as wide, densely minutely punctate

and pubescent outside, more finely punctate inside; basal tooth very small, obtuse on the inner side and small on the outside; petiole distinctly shorter than thick, about 1.20-1.80 times as long as thick basally and about 1.66 times as long as thick apically, with 4 carinae; abdomen widest a little behind middle, slightly longer than rest of body; first tergite about 0.66-0.75 of the dorsum, with a wide band of close, fine punctae along the hind margin, interrupted in the middle; with 12 longitudinal striae extending to beyond the basal 0.33 of the tergite; tergites 2-6 with minute close punctae not interrupted in the middle.

Male Length 4.30-4.80 mm. Head slightly more swollen than in female; outer margins of horns curved inwards basally; ocellar area about 0.20 of interocular space; antennae slender; scape equal to the following 5 segments combined; pedicel a little longer than thick, constricted basally; annellus narrow; first funicular segment a little more than 2 times pedicel, funicular segments gradually increasing in thickness, but becoming shorter apically; club about 2.50 times as long as the preceding segment; abdomen rounded at tip; shorter than thorax; genitalia slender; gonoforceps close dorsally; digit long, exceeding latero-apical projections.

Type locality Europe

Distribution Europe; Formosa, Japan; North Africa, India.

Hosts *Sarcophaga* sp., Tachinidae, *Musca domestia*

Dirhinus himalayanus Westwood

1839 *Dirhinus himalayanus,* Westwood, In : *Royle Illust. Himal. Mount.,* 2 : liv. pl. 10, fig. 8.

1909 *Dirhinus himalayanus,* Schmiedeknecht, *Gen. Ins.,* 97 : 65.

"Niger, pedibus 4 anterioribus, tarsisque posticis rufescentibus.

Capite obtuse bicornuto.

Long. corp. lin. 2. Exp. alar lin. 3.

Caput nigrum punctatum, antice obtuse bicornutum, antennarum articulo primo nigro articulis reliquis deteritis. Thorax fortiter punctatus; metathorace 4 lineato et ad latera, angulariter producto. Abdomen breve depressum thoracis latitudine. Pedes 4 anteriores rufescentes, 2 postici nigri, tarsis solummodo rufescentibus.

Obs. In hac specie pastes ous valde elongatae, labro oblongo-ovali ciliato, mandibulis inter se similibus, gracilibus, sub apice dente interno unico armatis"

Type locality Himalaya

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* *D. erythrocerus* Cam., *D. pachycerus* Masi and *Dirhinoides mathuri* Mani & Dubey may be conspecific with *D. himalayanus* Westn.

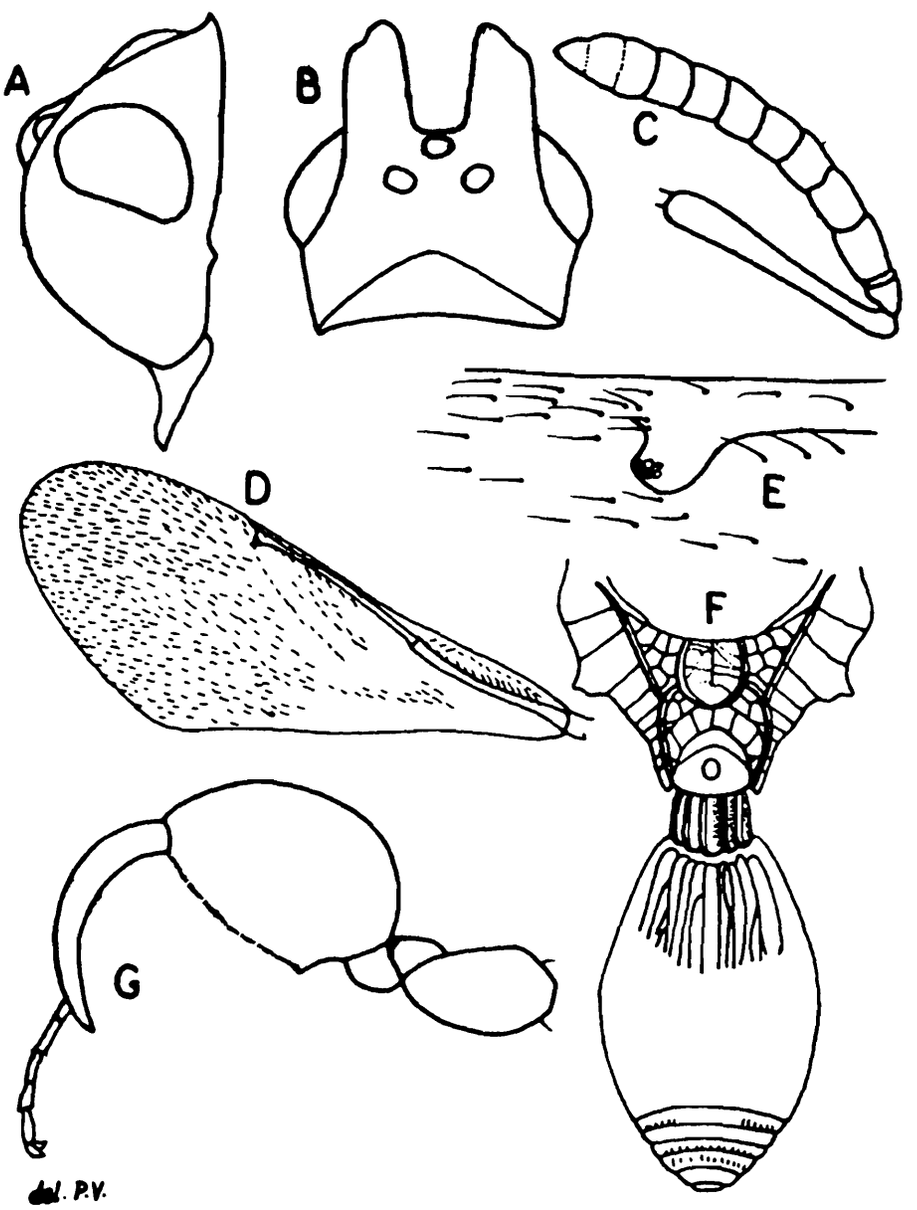

FIG. 77. *Dirhinus georgei* (Mani & Dubey), male : A. Head in profile view; B. Head in dorsal view; C. Antenna; D. Fore wing; E. Stigmal area of fore wing; F. Propodeum with abdomen; G. Hind leg.

*Dirhinus (Dirhinus) intermedius Mani & Dubey

(Fig. 76)

1972 *Dirhinus intermedius*, Mani & Dubey, *Oriental Ins.*, 6(3) : 404.

1974 *Dirhinus intermedius*, Mani & Dubey, *Mem. School Ent.*, 3 : 31.

Female Length 4.00 mm. Body black. Head and thorax closely umbilicately punctate and clothed with short silvery-white pubescence; hind leg black, except for the brown tarsus.

* This may be a synonym of *D. anthracia* Walk.

Head viewed from above as long as wide and as wide as the pronotum; interorbital space nearly 4 times the width of eye; postorbital space a little less than eye; interocellar space 1.30 times ocellocular space; front ocellar space a little less than the interocellar space; the front ocellus separated from the upper border of the scrobe by 0.50 of its own diameter; horns about as long as the eye; length to width 13 : 9; inner border of the horns distinctly higher than the outer raised border; viewed from the front head length to width 15 : 13; length of horn to eye diameter 38 : 13; antennae slender, inserted on level of lower orbital borders, with 13 segments; scape reaching the tip of the epi-orbital horns, about 0.50 of the antenna; pedicel nearly 0.20 of scape and slightly shorter than the first funicular segment; annellus about 0.40 of pedicel; funicular segments 1-3 subequal; funicular segments 4-6 slightly shorter than the first; seventh segment almost 0.60 of the first; club triarticulate, equal to preceding 3 segments combined; scrobe margined, when viewed from above, distinctly concavely arched; head in side view semi-lunar in outline, width to length 66 : 100.

Pronotum about 0.20 of thorax; scutellum 0.30 of thorax, punctate like mesonotum; propodeum with the median carina of areola faint, and continued behind the areola; mesonotum smooth and impunctate in the anterior 0.33; fore wing hyaline, densely clothed with fine pubescence, length to width 100 : 37; vein *sm* equal to *m*, *pm* absent, *st* sessile; fore femur moderately stout subapically; tibia slender, slightly shorter than femur, clothed with fine setae; tarsus a little shorter than tibia; metatarsus longest, the second segment nearly 0.70 of the metatarsus, the third and fourth tarsal segments subequal, fifth segment slightly shorter than 2 times the fourth and about 0.80 of the first; middle leg longer than fore legs; femur moderately stout subapically; tibia slightly longer than femora; tarsus nearly 0.80 of the tibia; metatarsus nearly 0.25 of the tibia, second nearly 0.50 of the metatarsus; third and fourth tarsal segments subequal; fifth segment 1.60 times the preceding segment and nearly 0.70 of the metatarsus; hind leg clothed with silvery-white pubescence, stout; hind femur 1.30 times as long as thick; tibia slightly longer than femora; tarsus about 0.75 of tibia; metatarsus nearly 0.50 of the second segment; third segment about 0.50 of the second and subequal to the first; fourth segment slightly shorter than the preceding segment and the fifth about 2 times the fourth and nearly 2 times the first; petiole quadrate, as wide as long, with 5 wide sulci; large tergite with 12 sulci, rest of abdomen smooth; abdomen to body 4 : 9 and length of abdomen about 2 times the width.

Type locality :· Gujri-Manpur (Vindhya Mountains)

Distribution . India : Bharatpur, Pune, Nilgiris, Schencottah Gap, Achankovil, Thanjavur, Nilambur, Punjab, Burma : Tharawady; Nepal Kirtipur

Hosts : Hyperparasite on *Hapalia machaeralis* defoliating teak and hyperparasite on *Plecoptera reflexa* defoliating *Dalbergia sissoo.*

This species would approximate to *Dirhinus parotideus* Masi and *D. cyprius* in Masi's key to species, but differs in the sulci on the large tergite of abdomen; it also differs in the proportions of head width to length when viewed from the side being 66% and not 60%. The species thus stands intermediate between the *D. parotideus, D. cyprius* -complex and *D. caelebs* Masi, in which this ratio is 72%.

Dirhinoides Masi

1847 *Dirhinoides,* Masi, *Eos,* 23 : 49.

1960 *Dirhinoides,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan,* (C) 11 : 311.

Head viewed from the side semi-lunar in outline; horns viewed above broad, rounded or obliquely obtruncate apically; frons without tooth below tip of horns on the outer margin of scrobes; punctae on head and thorax generally sparse; first tergite with longitudinal striae basally.

Type-species : Dirhinus pachycerus Masi

*Dirhinus (Dirhinoides) coromandeicus (Mani & Dubey)

(Fig. 78)

1974 *Pareniaca coromandelica,* Mani & Dubey, *Mem. School Ent.,* 3 : 30.

Male : Length 3.50 mm. Body black; eyes, ocelli brownish-black; antenna ferruginous-brown; fore and mid legs and hind tarsi ferruginous-brown; wings hyaline, veins dark brown.

Head viewed from above length to width 80 : 100, as wide as thorax; ocellocular space subequal to ocellar diameter; interocellar space 1.70 times ocellocular space; front ocellar space equal to ocellar diameter; epi-orbital horns 1.50 times as long as wide; acutely diverging in front, with the inner and outer margins moderately elevated; viewed from front length to width 100 : 93; infra-orbital space 1.50 times eye diameter; epistoma finely transversely striate; viewed from side length to width 100 : 67; postorbital space 0.76 of eye diameter, front ocellus contiguous with the upper border of scrobe; antennae slender, nearly 0.50 of the body; segments 13 : 1.1.1.7.3; scape 0.33 of the antenna, nearly 6 times as long as thick; pedicel 0.16 of scape; annellus 3 times as wide as long; first funicular segment 1.50 times pedicel, funicular segments 2-4 subequal, segments 5-7 subequal; club with segmentation very faint, slightly shorter than the preceding 3 segments combined.

Pronotum transverse, almost 3 times as wide as long, about 0.30 of thorax, closely umbilicately punctate, mesonotum slightly wider than long, anteriorly transversely smooth; scutellum as wide as long;

* This species may prove to be identical with *D. madagascarensis* Masi.

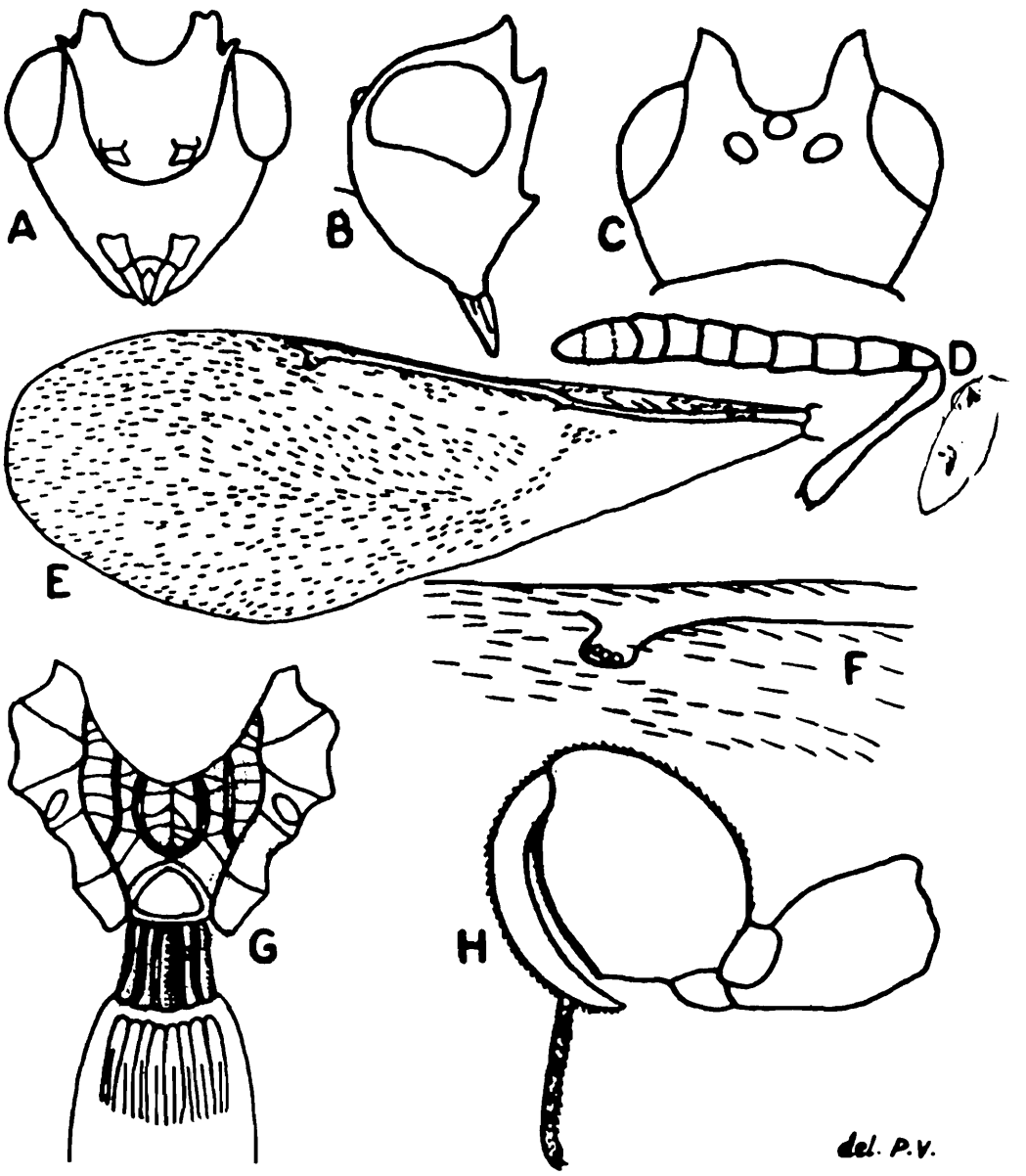

FIG. 78. *Dirhinus coromandelicus* (Mani & Dubey), male : A. Head in front view; B. Head in profile view; C. Head in dorsal view; D. Antenna; E. Fore wing; F. Stigmal area of fore wing; G. Propodeum with first abdominal tergite; H. Hind leg.

propodeum rugose, areola meets the convex posterior margin, median carina not extending beyond lateral angles of propodeum, dentate; fore wing length to width 100 : 38; veins *sm : m* subequal; *pm* absent, *st* sessile; hind coxa 1.80 times as long as wide; femur length to width 100 : 73, fine serration below; tibia slightly over femur; tarsus 0.50 of tibia, metatarsus 0.27 of tarsus, second segment 1.50 times metatarsus, third 0.70 of the second, fourth 0.70 of the third, fifth 2.20 times the fourth.

Abdomen to body 31 : 100; petiole quadrate, as wide as long with 5 wide sulci; large tergite 0.75 of abdomen, with 8 sulci, reaching to 0.35 of the tergite, posterior margin smooth.

Type locality : Mandapam (Coromandel Coast)

This species comes close to *Pareniaca ugandensis* Masi but differs in the shape of head viewed from the side, in the acutely pointed frontal horn, in the larger pre-orbital horn, 10 sulci at base of abdomen, colour of fore legs, in the body size and in the presence of a median carina in propodeal areola.

***Dirhinus (Dirhinoides) mathuri** Mani & Dubey

1972 *Dirhinoides mathuri,* Mani & Dubey, *Oriental Ins.,* 6 (3) : 401.

Female : Length 5.00 mm. Body black, closely umbilicately punctate, punctae closer together than their diameters; antennae dark ferruginous-brown; fore and middle legs ferruginous-brown, except for the black coxae; hind tarsi brown.

Head viewed from above nearly as wide as long, only very slightly narrower than the maximum width of thorax, but equal to width of pronotum; interocellar space equal to ocellocular space; postorbital space equal to eye diameter; front ocellus contiguous with the upper border of scrobe; horns about 2 times as long as wide, obtusely rounded anteriorly, with the inner and outer margins moderately elevated, inner margins distinctly converging behind; viewed from front length to width 18 : 15, with the infra-orbital space 2 times eye diameter; epistoma transversely striated; viewed from side, head semi-lunar in outline, width to length 57 : 100; horn a little more than eye diameter; eyes bare, length to width 5 : 4; gena to eye width 3 : 2; antennae short, stout, a little shorter than the head viewed in front, segments 13 : 1.1.1.7.3.; scape a little less than 0.75 of the rest of antenna; pedicel 2 times as long as thick, about 0.20 of the scape; funicular segments 1-2 transverse, subequal, only 0.50 times as long as thick and about 0.33 of the pedicel; funicular segments 3-5 subequal, longer than the second, about 0.75 times as long as thick; segments 6-7 subequal and about 0.75 of the fifth; club equal to segments 5-6 combined.

Pronotum almost 4 times as wide as long, about 0.16 of the length of the whole thorax, with 2 rows of close, umbilicate punctae posteriorly, smooth and without punctae in the middle in front; mesonotum slightly wider than long, prescutum with 4 widely separated rows of close umbilicate punctae; axillae almost without punctation; scutellum nearly as long as wide, with the central disc smooth, but apically with 3 obscure rows of moderately widely separated punctae; propodeum rugose, with the median longitudinal carina of areola continued beyond the areola to meet the concave posterior margin of the propodeum; laterally dentate, postero-lateral angles of propodeum dentate; fore wings hyaline, length to width 28 : 11; vein *sm* slightly shorter than *m; fore femur and tibia subequal; fore tarsus about 0.75 of tibia; fore metatarus about 0.25 of tibia and 0.33 of the tarsus; tarsal segments 2, 3 and 5 of fore*

* This species may prove to be identical with *D. himalayanus* Westw.

legs subequal, about 0.50 of the metatarsus, fourth segment shortest, middle legs similar to the fore legs; hind legs with the coxa transversely striate above and outside; femur length to width 10 : 7; first and second tarsal segments subequal; third and fourth segments a little shorter; fifth segment equal to the third and fourth segments combined.

Abdomen to body 4 : 9; petiole transverse, 3 times as wide as long; large tergite occupies 0.57 of the abdominal dorsum, with the sulcus area quadrate, wider than long, sulci 9 anteriorly and 14 posteriorly; ovipositor not exserted.

Type locality Punjab (Terah Plantation)

This species resembles *D. (D.) pachycerus* Masi from India in the striate epistoma and propodeal areolar carina. It approaches *D. (D.) wohlfahrtiae* Masi from North Africa in the shape of the horn viewed from above. It differs from *D. pachycerus* Masi in the horn (viewed from above) not being obliquely truncate. It differs from *D. wohlfahrtiae* in the transversely striate epistoma and in the median carina of the propodeal areola reaching beyond the posterior concave margin of propodeum.

Dirhinus (Dirhinoides) pachycerus Masi

1927 *Dirhinus pachycerus,* Masi, *Eos,* 3 : 42.
1947 *Dirhinus (Dirhinoides) pachycerus,* Masi, *Eos,* 23 : 49.

Female : Length 4.00-4.50 mm. Body black; antennae, fore and middle legs partly, especially coxae brown; hind tarsi pale; wings hyaline; tegulae and veins yellow; antennae brown.

Head stout, viewed from above 0.33 of body length, width 0.66 of length; epi-orbital horns subtriangular, acute, slightly above the level of eyes; outer margin forming a broad right angle with the front; inner margin raised, slightly convexly sinuate and continued into the vertex; horns viewed from above obliquely truncate apically, broadly rounded externally at tip; epistome finely transversely striated; propodeal areola united by short carina with concave hind margin; ocellar area prominent; gena swollen, with 4-5 rows of setigerous punctae below the eye; fovea in the angle of horn very small, close to the anterior margin of the eye; upper and posterior one distinct; horns viewed from above broad; interspace between the horns not exceeding 0.33 of their width; sides parallel; apical margin obtusely rounded; surface slightly convex, fovea equally and regularly, longitudinally 5-striate; head viewed in front with stout horns, face broad, scrobe about 0.46 as wide as long with parallel sides, epistome transversely striolate; clypeus small subquadrate, smooth and shiny; slightly convex, labrum triangular, flat; scape subequal to funicle; annellus and funicular segments subquadrate, transverse; pronotum short, 0.28 times as long as wide, with 3 transverse rows of setigerous

fovea; mesonotum impunctate, subnitidous in the front margin; microscopically reticulate, with 4-5 longitudinal rows of setigerous punctae, which become obliterated in the middle; scapula smooth, shiny; scutellum semicircular, smooth, almost shiny; propodeum with prominently acute posterolateral angle and uniformly punctate, with a median concave depression; middle femur slightly atennuate basally, slightly subglobosely dilated apically; hind femur outside shiny with setigerous punctae; petiole short, with 5 fovea, 3 middle ones subquadrate, outer ones triangular; abdomen short, about 0.78 of thorax; first tergite with 10 striations in front, hind margin punctulate; tergites 2-4 obscurely punctate, smooth along the margin; tergites 5 and 6 generally punctate.

Type locality : Calcutta

Distribution : Calcutta

Dirhinus (Dirhinoides) pambaeus Mani & Dubey

(Fig. 79 & 80)

1973 *Dirhinus pambaeus,* Mani & Dubey, *Mem. School Ent.,* 3 : 33.

Male : Length 3.50 mm. Body black; eyes brownish-black, ocelli reddish-brown; antennae ferruginous-brown; wings hyaline, veins pale brown, fore and middle legs and hind tarsus brown; head and thorax closely umbilicately punctate and clothed with short silvery-white pubescence.

Head viewed from above length to width 100 : 89, nearly 1.20 times as wide as the pronotum; interorbital space nearly equal to 3 eye width, postorbital space 0.70 of eye, ocellocular space 1.50 times ocellar diameter, interocellar space equal to ocellar diameter; front ocellus separated from the upper border of scrobe by nearly 0.75 of its own diameter; ocellocular space nearly 2 times the interocellar space; horns about 0.70 of eye, length to width 11.60 : 9, inner border distinctly concavely arched; head viewed in front subequal to width; viewed from side semi-lunar, height to width 100 : 63; antennae slender, inserted on level of lower orbital borders, segments 13 : 1.1.1.7.3; scape reaching to the tip of epi-orbital horns, about 0.40 of antenna, nearly 7 times as long as its own thickness; pedicel about 0.17 of scape and about 0.50 of the first funicular segment; annellus about 0.40 of pedicel; first funicular segment 0.35 of scape and 2.30 times as long as its own thickness, segments 2-6 subequal, seventh 1.25 times the sixth; club almost equal to the preceding 2 segments combined.

Pronotum about 0.33 of thorax, length 3 times width, mesonotum smooth and impunctate in the anterior 0.33; propodeum with median carina faint, zigzag, produced behind; fore wing densely clothed with fine pubescence, length to width 100 : 37; vein *sm* subequal to *m, pm* absent, *st* sessile; hind coxa 2 times its thickness;

* This species may be identical with *D. auratus* Ashm.

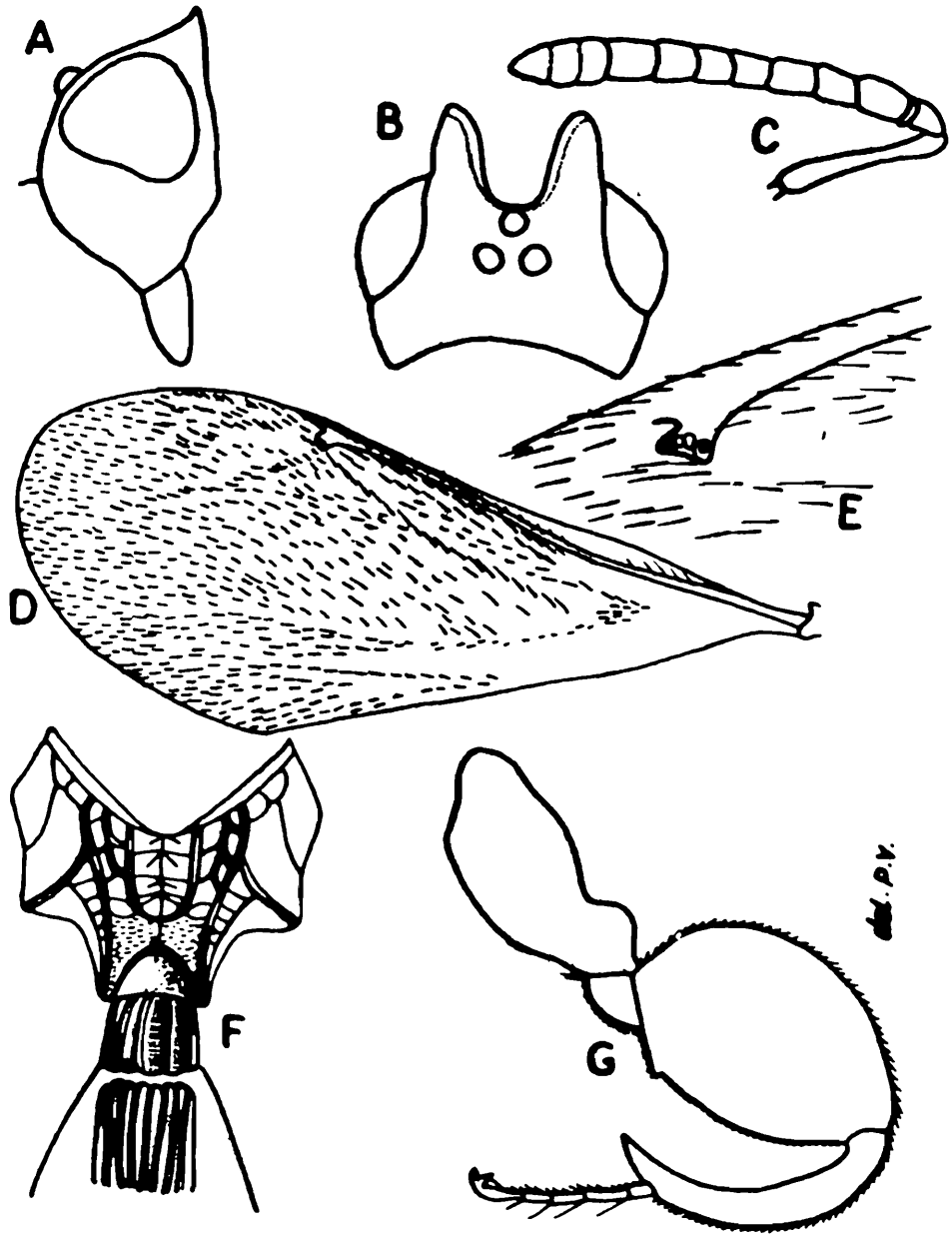

FIG. 79. *Dirhinus pambaeus* Mani & Dubey, female : A. Head in profile view; B. Head in dorsal view; C. Antenna; D. Fore wing; E. Stigmal area of fore wing; F. Propodeum with first abdominal tergite; G. Hind leg.

femur length to width 100 : 64, fine serration below; tibia slightly over femur; tarsus about 0.50 of tibia, metatarsus 0.17 of tarsus, second segment about 1.30 times metatarsus, third subequal to second, fourth nearly 0.60 of the third, fifth about 1.60 times the preceding; petiole quadrate, as wide as long, with 5 wide sulci; large tergite with 7 sulci reaching to 0.40 of the tergite, rest of abdomen smooth; abdomen to body 5 : 13 and length of the abdomen about 1 70 times its width.

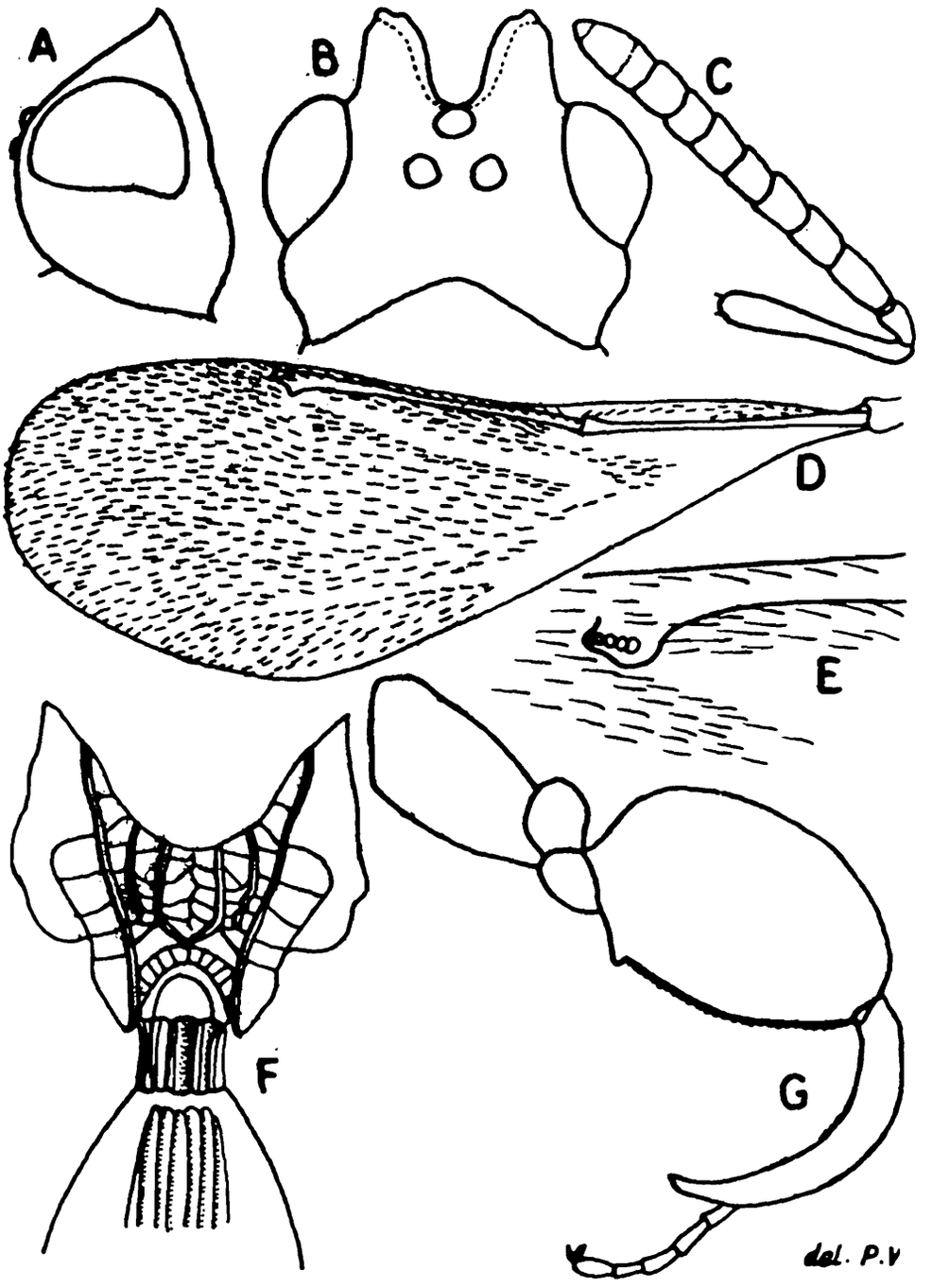

FIG 80. *Dirhinus pambaeus* Mani & Dubey, male : A. Head in profile view; B. Head in dorsal views; C. Antenna; D. Fore wing; E. Stigmal area of fore wing; F. Propodeum with first abdominal tergite; G. Hind leg.

Female : Length 4.00 mm. Body black, reddish-brown; eyes, ocelli, antenna, fore and middle legs, hind tarsus brown; head and thorax closely umbilicately punctate and clothed with short silvery-white pubescence.

Head length to width 100 : 83; interorbital space about 3 times width of eye; postorbital space nearly 0.50 of the eye; interocellar space subequal to ocellar diameter; ocellocular space equal to 2 times

ocellar diameter; front ocellar space equal to interocellar space, front ocellus very close to the upper border of scrobe; horns about 0.70 of eye, length to width 10 : 10; inner border of horns distinctly higher than the outer; scrobe margins when viewed from above distinctly concavely arched; head viewed from side width to length 100 : 64; antenna slender, inserted on level of lower orbital border, segments 13 1 1 1 7.3; scape reaching to the tip of epi-orbital horns, about 0.40 of antenna, 7 times thickness; pedicel nearly 0.17 of scape and about 0.50 of the first funicular segment; annellus about 0.30 of pedicel and as wide as long; first funicular segment longest, 1.30 times the pedicel; segments 2-6 subequal, seventh 1.20 times the sixth; club almost equal to preceding 2 segments combined, first and second club segments subequal, terminal segment 1.30 times the preceding club segment; pronotum about 0.23 of thorax; mesonotum smooth and impunctate in the anterior 0.30; punctae on scutellum like mesonotum; median carina of areola faint; continued behind the areola; fore wing densely clothed with fine pubescence, length to width 100 : 42; vein *sm* : *m* 80 : 100, *pm* absent, *st* sessile; hind leg finely pubescent, coxa about 2.50 times as long as wide; femur slightly over coxa, nearly 1.60 times as long as thick; tibia slightly longer than femora; tarsus about 0.50 of tibia, metatarsus 0.14 of tarsus, second segment about 1.60 of metatarsus, third and fourth subequal to the fifth, 1.50 times the preceding segment and a little less than 2 times the metatarsus; petiole quadrate with its distal end wider than proximal, 1.25 times as wide as long, with 5 sulci; large tergite with 8 sulci, reaching to 0.40 of tergite, rest of abdomen smooth; abdomen to body 5 : 15 abdomen about 1.60 times as long as wide.

Type locality Moozhiar-Tekkady Road (Cardamom Hills)

Hontalia Cameron

1884 *Hontalia,* Cameron, *Biol. Centr. Amer. Hym.,* 1 : 112.
1906 *Chontalia,* Schultz, *Spol. Hym.,* 149.
1913 *Pareniaca,* Crawford, *Proc. US nat. Mus.,* 45 : 312.
1960 *Dirhinus (Hontalia),* Habu, *Bull. Nat. Inst. Agric. Sci. Japan* (C) 11 : 328.

Horns with one acute tooth apically; frons with one more or less acute tooth below apex of horns laterally on margin of scrobe; punctae on head and thorax compact; first abdominal tergite usually with longitudinal striae basally.

Type-species *Hontalia caerulea* Cameron

Dirhinus (Hontalia) trichophthalma (Masi)

1927 *Pareniaca trichophthalma,* Masi, *Eos,* 3 (1) : 39-41.
1947 *Pareniaca trichophthalmus,* Masi, *Eos,* 23 : 42, 46.
1960 *Dirhinus (Hontalia) trichophthalmus,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan* (C) 11 : 328.
1972 *Pareniaca trichophthalma,* Mani & Dubey, *Oriental Ins.,* 6 (3) : 401-408.
1973 *Pareniaca trichophthalma,* Mani & Dubey, *Mem. School Ent.* 3 : 29.

Female : Length 4.00 mm. Body generally black, shiny; head black, antennae black, sometimes faintly red; thorax black or very dark reddish-brown; wings hyaline; veins pale brown, sometimes red apically; coxae black; fore and middle trochanters reddish-brown; hind trochanter black; fore and middle femora blackish-red; hind femora black, shiny; fore and middle tibiae black except for the brown base and apical 0.33; hind tibiae black; tarsi pale brown; abdomen shiny black.

Head viewed from above slightly wider than thorax and also slightly wider than long, closely, deeply punctate, space between punctae carinate; horns diverging apically, about 0.33 of head, more than 2 times as long as wide, with the inner margin diverging to nearly 0.60 of the length and afterwards abruptly diverging to the tip, which is reflexed; outer margin of horns parallel; ocellar area raised, without carinae along outer margin of lateral ocelli; head viewed from side about 1.66 times as long as wide, tooth at tip of horns small, acute, tooth at base of horns acute but small; eyes small, not prominent, densely hairy; ventral marginal scrobe carinate; antennae somewhat clavate with 13 segments; scape a little more than segments 2-7 combined, slightly dilated at basal 0.33; pedicel slightly shorter than first 2 funicular segments combined and about 2 times as long as thick; annellus about 0.50 of pedicel; funicular segments becoming gradually shorter and thicker apically; first funicular segment about 1.50 times the annellus; second segment as long as thick; third segment slightly thicker than long; terminal funicular segment slightly shorter than the first funicular segment; club about 2.50 times the preceding segment.

Thorax with close, deep punctae, confluent in part, scutum in front widely impunctate; parapsidal furrows deep; scutellum without punctae in the middle, as long as wide; propodeum wide, median carina in areola faint, short, fine behind areola, submedian carinae distinct; fore wings about 2.50-2.60 times as long as wide; vein *m* about 1.20 times *sm*; hind coxae about 0.85 of hind femora, densely rugose outside and densely punctate below; hind femora about 1.33 times as long as wide; minutely sparsely punctate, densely, transversely striate outside and sparsely punctate inside; basal tooth very small, obtuse; petiole about 1.50 times as long as wide in front and more than 2 times as long as wide behind, with 4 fine longitudinal carinae; abdomen longer than thorax, widest before middle, pointed behind; first tergite occupying almost 0.75 of dorsum, smooth above, laterally minutely closely puntate, with 9-12 longitudinal striae extending to almost 0.40 of the tergite, its hind margin slightly emarginate in the middle; tergites 2-6 with rows of fine close setigerous punctae.

Male : Length 2.80-3.10 mm. Head as in female, but outer margin of horn shorter; antennae more slender; scape a little longer than segments 2-6 combined; pedicel a little longer than thick;

annellus less than 0.33 of pedicel and 2.50 times as wide as long; funicular segments gradually becoming shorter and thicker; first funicular segment about 1.50 times as long as pedicel and 1.50 times as long as thick; club about 2.50 times the preceding segment; fore wing 3 times as long as wide.

Type locality Calcutta

Distribution India; Japan; Philippines

Species Incertae Sedis

Dirhinus erythrocerus Cameron

1906 *Dirrhinus erythrocerus,* Cameron, *J. Bombay nat. Hist. Soc.,* 17 : 92.

Male Length 3.50 mm. "Body black; antennae, fore and middle femora, tibiae and all tarsi rufous; body and legs sparsely clothed with silvery-white pubescence; wings hyaline, nervure fuscous.

Centre of head above strongly punctate, punctae round, distinctly separated, centre of vertex with a broad, strongly aciculated longitudinal band; occiput broadly roundly incised; centre depressed; frontal lobes 2 times longer than wide at base; narrowed towards apex, inner edge has a distinct margin; depressed, inner and apical edges raised, outer less distinctly margined; frontal incision becomes gradually widened towards apex, it being there fully 2 times width of base; pro and mesonotum strongly punctate; former has the apex smooth in the middle; scutellum is largely impunctate; propodeum closely reticulated-striated; a short keel in the middle of apex; on the sides are 2 keels which converge and unite near the apex, forming a longish triangular area; sides, at base are broadly roundly dilated, in the middle stout triangular tooth; apex projects into a shorter tooth; propleurae (especially above) strongly punctured; base of mesopleurae much less strongly, but not very regularly striated, 2 parts being separated by a curved keel; metapleurae distinctly irregularly reticulated; petiole broader than long, above with 4 stout, longitudinal keels; base of second tergite, extending from the base to near the middle, closely striated space; apical tergite broadly, deeply, roundly incised in the centre; hind coxae flat above and finely closely striated in the middle.

The roundly, deeply incised apex of the abdomen separates this species from *D. excavatus,* Dal. and *D. ruficornis,* Cam. in which the apex is trilobate, it having a large central, bordered by a small lateral lobe."

Type locality Quetta.

SUBFAMILY EPITRANINAE

1904 *Chalcitellini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 254.
1909 *Chalcitellini,* Schmiedeknecht, *Gen. Ins.,* 97 :

Head without horns; antennae inserted well below level of lower orbital border, near mouth; hind tibiae obliquely sinuate apically, with the tip forming an acute projection; abdomen with long petiole, not laminate at base. The subfamily is represented by a single genus *Epitranus* Walker

Epitranus Walker

1834 *Epitranus,* Walker, *Ent. Mag.,* 2 : 21, 26.
1835 *Chalcitella,* Westwood, *Proc. Zool. Soc. London,* 3 : 70.
1883 *Anacryptus,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 54, 56.
1883 *Arretocera,* Kirby, *J. Linn. Soc. London* (Zool.) 17 : 54.
1904 *Anacryptus,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 254.
1904 *Arretcocera,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 254.
1904 *Chalcitella,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 254.
1909 *Epitranus,* Schmiedeknecht, *Gen. Ins.,* 97 : 36.
1909 *Anacryptus,* Schmiedeknecht, *Gen. Ins.,* 97 : 48.
1909 *Arretocera,* Schmiedeknecht, *Gen. Ins.,* 97 : 49.
1909 *Chalcitella,* Schmiedeknecht, *Gen. Ins.,* 97 : 49.
1913 *Arretoceroidella,* Girault, *Arch. Naturg.,* 79 (A) (6) : 66.
1913 *Neanacryptus,* Girault, *Arch. Naturg.,* 79 (A) (6) : 86.
1914 *Chalcitelloides,* Girault, *Ent. News,* 25 : 30.
1915 *Paranacryptus,* Girault, *Mem. Queensland Mus.,* 4 : 347.
1915 *Arretoceroides,* Girault, *Mem. Queensland Mus.,* 4 : 351.
1938 *Pararretoceroides,* Mani, *Cat. Indian Ins.,* 23 : 149.
1940 *Epitranus,* Masi, *Boll. R. Lab. ent. Agr. Portici,* 3 : 267.
1960 *Epitranus,* Habu, *Bull. Nat. Inst. Agric. Sci. Japan* (C) 11 : 296.

Head viewed from front strongly constricted below eyes; scrobe not deep, but flat; pre-orbital and postorbital carinae well developed, united below eyes; antennal sockets situated directly above frontoclypeal suture; clypeus produced below, narrow; antennae stout, with 11-14 segments with pedicel and annellus short; segments 4-10 not longer than thick; club distinctly biarticulate; scutellum unarmed; propodeum flat, strongly emarginate behind, with posterior condyles distinct; wings almost without cilia; vein *pm* absent; hind coxae without protuberances basally above; hind femora with one large tooth followed by pectinate teeth or several simple teeth; hind tibiae with small protuberance basally; middle tibial spur absent; abdominal petiole long, stout with longitudinal carinae; abdomen compressed, pointed behind; first tergite occupying about 0.50 of the abdomen, basal margin not carinate, basal area above not carinate and not concave, but transversely depressed.

Type-species : Epitranus fulvescens Walker

The species are mostly associated with ants.

*KEY TO SPECIES

1.	Hind tibiae basally with an obtuse tooth-like process above.	2
	Hind tibiae unarmed.	9
2.	Antennae with 13 segments.	*Epitranus marattensis* (Mani & Dubey)
	Antennae with less than 13 segments.	3
3.	Body largely black; antennae with 12 segments; pedicel longer than first funicular segment	*Epitranus chilkaensis* (Mani)
	Body largely reddish-brown or red.	4
4.	First funicular segment in female shortest; in male longest.	*Epitranus sanguineus* (Girault)
	First funicular segment not as above.	5
5.	Scape about 7 times as long as thick.	*Epitranus cawnporensis* (Mani & Dubey)
	Scape not 7 times as long as thick.	6
6.	Large sized species, 6.00 mm or more long	7
	Smaller species, 5.00 or less.	8
7.	First funicular segment longest; hind femora longer than coxae.	*Epitranus shaffii* (Mani & Dubey)
	First funicular segment only slightly longer than pedicel; hind femora subequal to hind coxae	*Epitranus muzafferi* (Mani & Kurian)
8.	Scape subequal to funicle; ocellocular space about 1.50 times the front ocellar space.	*Epitranus raoi* (Mani & Kurian)
	Scape shorter, equal to pedicel, annellus and the first 3 funicular segments combined; ocellocular space about 0.20 of front ocellar space	*Epitranus sontakayi* (Mani & Kurian)
9.	Hind femora with 7-8 distinctly separated teeth, but not serrate or denticulate.	10
	Hind femora with one basal tooth, followed by numerous denticulate or serrate teeth	15
10.	Body largely black.	11
	Body largely red or brownish-black.	13
11.	Scape about 0.45-0.50 of antennae, 7 times as long as thick.	12
	Scape hardly 0.33 of antennae; first funicular segment distinctly shorter than the second	*Epitranus keralensis* (Mani & Dubey)
12.	First funicular segment subequal to the second	*Epitranus annexia* (Mani & Dubey)
	First funicular segment shorter than the second	*Epitranus ultima* (Mani & Dubey)

* There is much confusion about the identity of different species, *Vide* Supplement at the end for synonymies — *Note added in second proof.*

13. Scape about 7 times as long as thick.	14
Scape not more than 5 times as long as thick	*Epitranus dubeyi* (Mani & Dubey)
14. Hind femoral teeth 1-5 long, 6-9 short.	*Epitranus borivilius* (Mani & Dubey)
Hind femoral teeth 1-5 long, 6-8 short, tooth 9 minute.	*Epitranus monticolus* (Mani & Dubey)
15. Hind coxae shorter than or at the most subequal to petiole, never longer.	16
Hind coxae distinctly longer than petiole.	20
16. Hind coxae subequal to petiole.	17
Hind coxae shorter than petiole.	19
17. First funicular segment shorter than pedicel; ocellocular space equal to ocellar diameter..	*Epitranus sancti-johani* (Mani & Dubey)
First funicular segment longer than pedicel..	18
18. First funicular segment about 2.50 times the pedicel; ocellocular space equal to ocellar diameter ..	*Epitranus malabarensis* (Mani & Dubey)
First funicular segment about 1.30 times the pedicel. ..	*Epitranus ophiomontanus* (Mani & Dubey)
19. Hind femora with one large tooth at base, followed by 11 smaller teeth.	*Epitranus ambadevius* (Mani & Dubey)
Hind femora with one large tooth at base, followed by 9 finer teeth.	*Epitranus pallava* (Mani & Dubey)
20. Hind femora with one large basal tooth, followed by 10 small teeth.	*Epitranus ceylonensis* (Mani)
Hind femora with only 8 teeth, of which the first is the largest.	*Epitranus austini* (Fernando)
Hind femora with one large basal tooth, followed by 8-9 smaller teeth.	21
21. Hind femora with one large basal tooth, followed by 8 smaller teeth; pedicel about 0.90 of the first funicular segment.	*Epitranus ramnathi* (Mani & Dubey)
Hind femora with one large basal tooth, followed by 9 smaller teeth.	22
22. Funicular segments 3-4 subequal; segments 5-7 slightly shorter than 4, subequal; pedicel about 0.90 of the first funicular segment; vein *m* about 0.66 of *sm*.	*Epitranus tanjorensis* (Mani & Dubey)
Funicular segments 2-3 subequal, 4-7 subequal, each slightly shorter than 3; pedicel about 0.70 of the first funicular segment; vein *m* about 0.83 of *sm*.	*Epitranus nilamburensis* (Mani & Dubey)

Epitranus marattensis (Mani & Dubey)

(Fig. 81)

1973 *Anacryptus marattensis,* Mani & Dubey, *Mem. School Ent.*, 2 : 31.

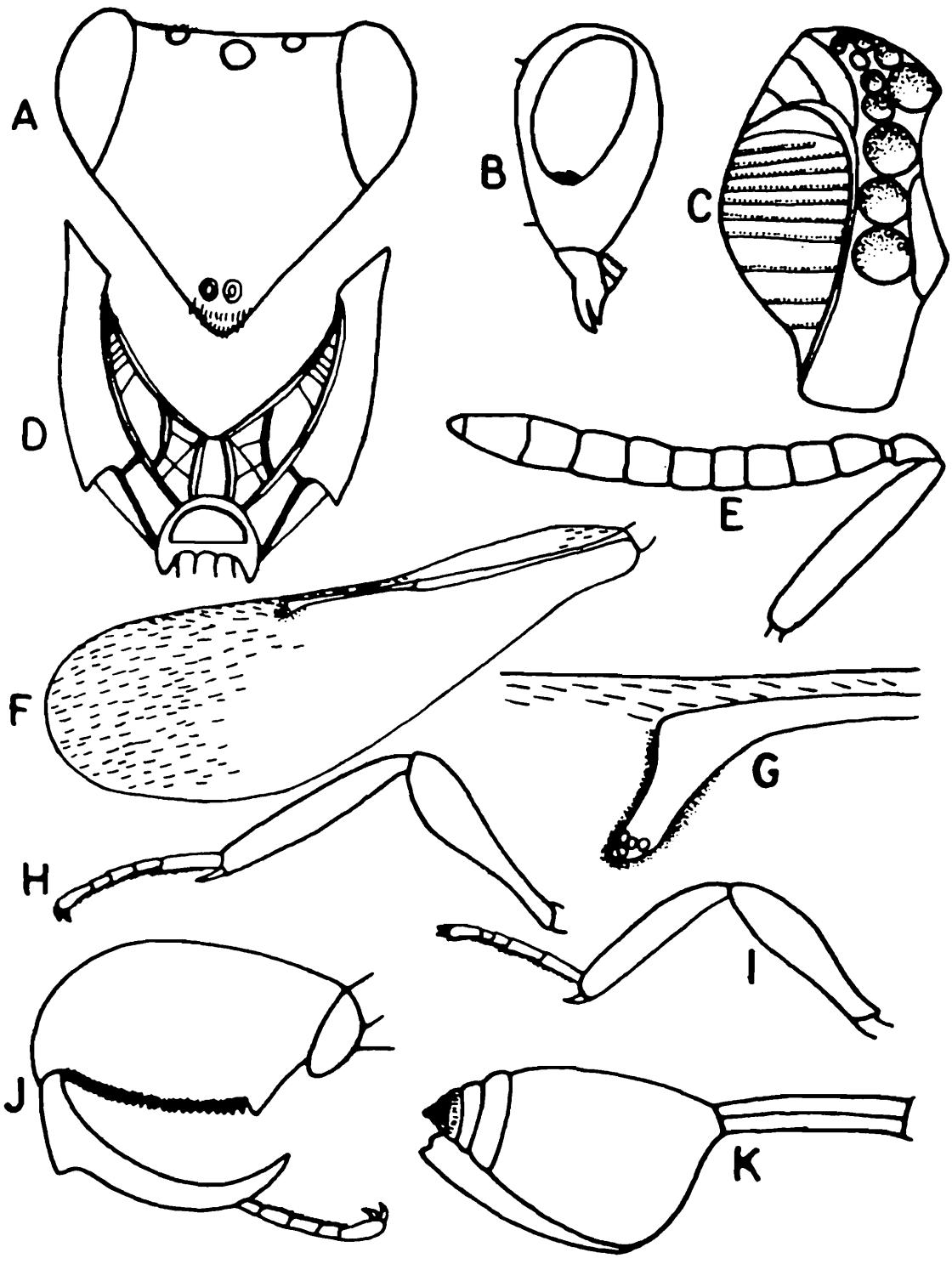

FIG. 81. *Epitranus marattensis* (Mani & Dubey), female : A. Head in front view; B. Head in profile view; C. Mesopleura; D. Propodeum; E. Antenna; F. Fore wing; G. Stigmal area of fore wing; H. Middle leg; I. Fore leg; J. Hind leg; K. Abdomen.

Female Length 4.50 mm. Body dark ferruginous-brown; dorsum of petiole and abdomen ferruginous-black; antennae ferruginous-red, tip of club darker; ocelli black; femoral serration and inner carina of hind tibia black; wing hyaline, vein pale brown.

Head viewed from above width to length 100 : 44; head width to thorax width 100 : 89; ocellocular space a little more than ocellar diameter; interocellar space nearly 2.50 times ocellar space; front ocellar space equal to ocellocular space; vertex and occiput closely distinctly separately, deeply, umbilicately punctate; face with well separated, relatively shallow punctae; space equal to diameter of punctae below and slightly more above; viewed from front triangular, width to length 100 : 88; viewed from side height to width 100 : 67; a little more than 1.50 times as long as wide; gena about 0.50 of eye, with scattered punctae as on face; occiput sharply margined, with a row of deep punctae; antenna slender with 13 segments : 1 1 1 7.3; scape 0.50 of antenna, nearly 5 times as long as thick; pedicel equal to first funicular segment; annellus slightly wider than its own length; first 3 funicular segments subequal; fourth and fifth subequal; sixth and seventh subequal but sixth 1.25 times the fourth; club equal to the preceding 3 segments combined, first segment subequal to last funicular segment, second segment 1.30 times the first, terminal segment short, conical, smallest nearly equal to annellus.

Pronotum transverse, almost 4 times as wide as long, about 0.33 of thorax; mesonotum with umbilicate punctae, space between punctae more than their diameter; scutellum and pronotum more closely punctate; propodeum with 2 parallel carinae; fore wing length to width 100 : 32; veins *sm : m* ratio 180 : 100, *pm* absent, *st* short; fore femur moderately stout, subclavate; tibia slightly shorter than femur; tarsus 0.70 of tibia; metatarsus 0.33 of tarsus; second slightly shorter than metatarsus; third nearly 0.50 of the second; fourth segment shortest, about 0.75 of the third; fifth subequal to second segment; middle leg distinctly longer than fore leg; middle femur clavate; tibia subequal to femora; tarsus nearly 0.80 of tibia; metatarsus a little less than 0.50 of tarsus; second segment nearly 0.50 of metatarsus; third subequal to second; fourth 0.80 of the third; fifth equal to the preceding 2 segments combined; hind femur 2 times as long as thick, 1.70 times as long as coxa, with one large tooth followed by fine serration; tibia with one large tooth near base above, slightly shorter than femora; tarsus about 0.50 of tibia; metatarsus about 0.70 of the second segment; third subequal to second; fourth 0.70 of the third; fifth nearly 2.50 times the fourth.

Petiole cylindrical, longitudinally grooved, subequal to hind coxa and 0.60 of abdomen, 5 times longer than its own thickness.

Type locality : Bombay

Epitranus chilkaensis (Mani)

1936 *Anacryptus chilkaensis,* Mani, *Rec. Indian Mus.*, 38 : 127.
1938 *Anacryptus chilkaensis,* Mani, *Cat. Indian Ins.*, 23 : 148.
1940 *Anacryptus chilkaensis,* Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 6.

Male Length 4.50 mm. Body generally black; head black; eyes dark reddish-brown; thorax black; wings hyaline; all legs dark reddish-brown; abdomen very dark ferruginous; petiole black except for the brown tip.

Head as wide as thorax; scrobes transversely striate, without distinct sculpture above and behind; sides longitudinally striate, strongly carinate behind and above in the gena; antennae a little less than 0.50 of body, with 12 segments : 1.1.1.8.1; scape about 0.50 of antenna, with a slight lateral expansion towards tip; pedicel somewhat longer than the first funicular segment; annellus transverse, not as wide as funicle; first funicular segment shortest, less than 0.50 of the second segment, slightly stouter apically than basally; second funicular segment longest, uniformly thick; remaining funicular segments subequal; third segment slightly stouter basally; club almost 2 times the preceding segment, apically reduced, not biarticulate as it appears because of the transverse band; thorax with large rugose punctae, the punctate themselves being minutely punctate; propodeum without sculpture; hind coxae moderately setose, transversely striate; hind femora faintly longitudinally striate, with 14 small, black, blunt teeth, behind a large basal tooth, the first tooth smallest; petiole equal to hind coxae, distinctly longitudinally corrugated; abdomen smooth, with sparse, long setae.

This species is recognized by the solid club and the hind femora with 14 teeth.

Type locality : Barkuda Island (Chilka Lake)

Host : Camponotus compressus

Epitranus sanguineus (Girault)

1915 *Paranacryptus sanguineus,* Girault, *Mem. Queensland, Mus.,* 4 : 349.
1936 *Paranacryptus sanguineus,* Mani, *Rec. Indian Mus.,* 38 : 127-128.
1938 *Paranacryptus sanguineus,* Mani, *Cat. Indian Ins.,* 23 : 149.

Female : Length 5.00 mm. Body mostly dark blood-red, with more or less black suffused; head honey-brown; antennae dark reddish-brown; club black tipped, with transverse reddish stripe.

Head umbilicately punctate, without punctae in the middle of face; head viewed in front subtriangular, about 0.86 times as long as wide; pedicel about 0.16 of scape; first funicular segment about 0.50 of the others, shortest; segments 2-5 subequal, as long as thick; segments 6-7 equal to the fifth but thicker; club about 0.50 of scape, solid.

Male First funicular segment longest; otherwise as in the female.

Type locality : Australia

Distribution : Australia; India : Port Blair (Andaman Islands)

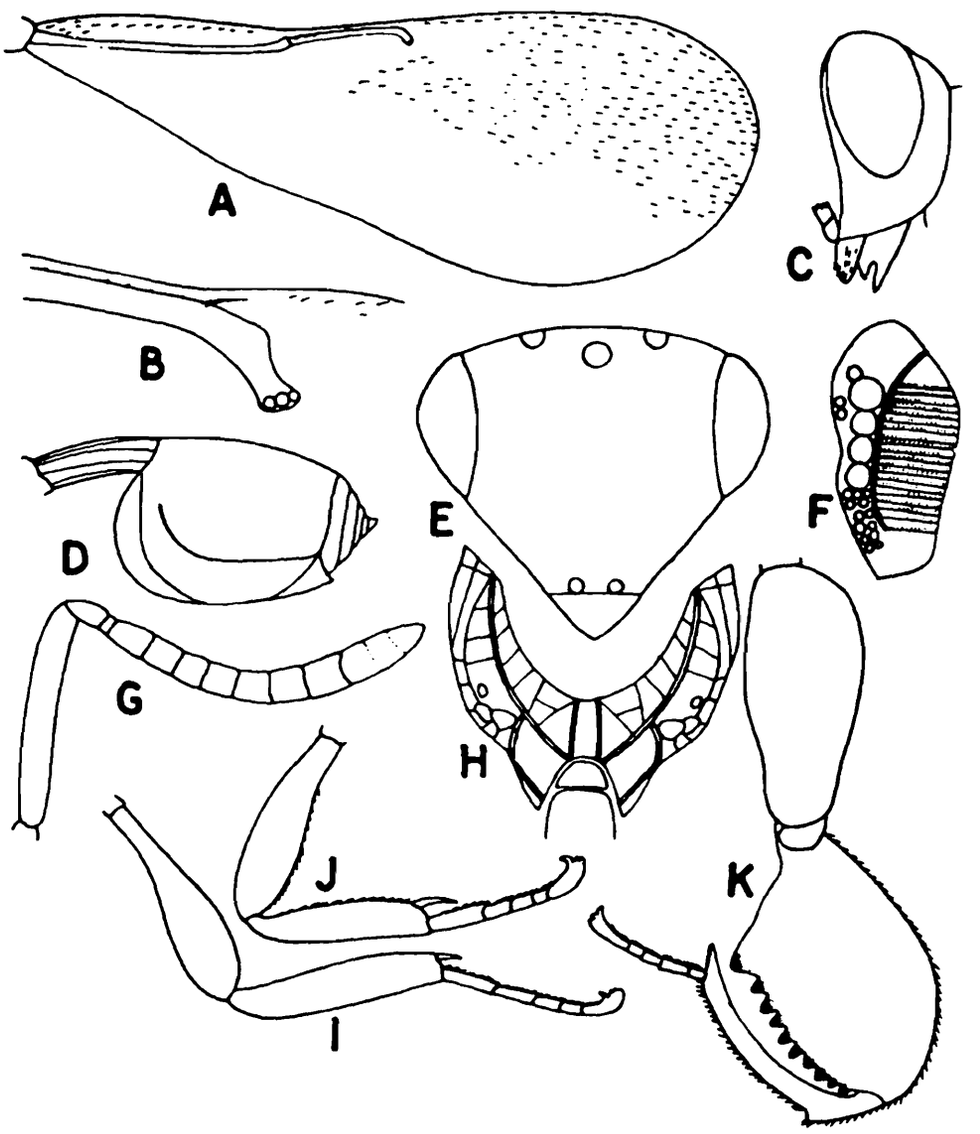

FIG. 82. *Epitranus cawnporensis* (Mani & Dubey), female : A. Fore wing; B. Stigmal area of fore wing; C. Head in profile view; D. Abdomen; E. Head in front view; F. Mesopleura; G. Antenna; H. Propodeum; I. Middle leg; J. Fore leg; K. Hind leg.

Epitranus cawnporensis (Mani & Dubey)

(Fig. 82)

1973 *Anacryptus cawnporensis,* Mani & Dubey, *Mem. School Ent.,* 2 : 30.

Female : Length 4.00 mm. Body dark ferruginous-brown, eyes blackish-brown; ocelli black; antenna ferruginous-brown; head, metathorax, dorsum of petiole, abdomen ferruginous-black; femoral teeth black; wings hyaline, vein pale brown.

Head viewed from above width to length 100 30, as wide as thorax; ocellocular space a little less than 2 ocellar diameters; interocellar space equal to ocellocular space; viewed from front width to length 100 : 60; viewed from side height to width 100 : 55; vertex and occiput deeply, umbilicately punctate, punctae closer together than their own diameters; antennae slender, with 13 segments : 1.1.1 7.3; scape slightly shorter than 0.50 of antenna, nearly 7 times as long as thick; pedicel subequal to first funicular segment; annellus 2 times as wide as long; first funicular segment longest; second and third funicular segments subequal; segments 4-7 subequal; fourth slightly shorter than thick; club a little longer than 2 times the last funicular segment; first and second club segments subequal, terminal segment conical, slightly more than preceding segment.

Pronotum transverse, almost 3 times as wide as long, mesonotum with punctae closer together than their diameters; propodeum with 2 median parallel carinae, slightly diverging behind; fore wing length to width 100 : 36; vein *sm : m* ratio 150 : 100, *pm* absent, *st* very short; fore femur moderately stout subapically; tibia subequal to femur; metatarsus 0.33 of tarsus; second 0.80 of the first; third nearly 0.50 of metatarsus; fourth slightly shorter than preceding; fifth subequal to second and slightly shorter than 0.50 of the fourth segment; middle leg distinctly longer than fore leg; femur clavate apically; tibia slightly longer than femur; tarsus nearly 0.70 of tibia; metatarsus 0.33 of tarsus; second segment 0.80 of metatarsus; third segment 0.70 of the second; fourth segment 0.70 of the third; fifth segment equal to the 3 preceding and subequal to metatarsus; hind leg clothed with silvery-white pubescence, stout; coxa a little over 2 times as long as wide, as long as abdominal petiole; femur almost 2 times as long as thick, slightly longer than coxa, with one large tooth at base followed by 9 fine teeth behind; tibia with one large tooth near base above, about 0.90 of femur; tarsus 0.50 of tibia; metatarsus 0.50 of second segment; second segment 1.50 times the third; third slightly longer than fourth; fourth subequal to metatarsus; fifth equal to 3 preceding; petiole flattened dorsally, finely striate at tip, longitudinally grooved, 3 times as long as thick, 4 carinae at side, nearly 0.50 of abdomen; abdomen compressed; viewed from side, width : length 73 : 100.

Type locality : Cawnpore

Epitranus shaffii (Mani & Kurian)

1953 *Anacryptus shaffii,* Mani & Kurian, *Indian J. ent.,* 15 : 5.

Male : Length 6.50 mm. Body black; head reddish-brown; ocelli black; antennae reddish-brown; legs reddish-brown except the brownish-black hind coxa and femur; fore wings slightly clouded yellow.

Head viewed from above transverse, about 2.50 times wider than long, coarsely rugosely punctate; ocelli almost in a sinuate line; ocellocular space about 0.75 of the interocellar space; front ocellar space about 0.50 of the ocellocular space; head viewed from front triangular; face slightly excavate in the middle above the antennal sockets, transversely striate and margined at the orbital borders, rest of face rugosopunctate; clypeus flattened, acutely pointed in front; gena prominent; eyes bare, nearly circular; antennae with 12 segments: 1.1.1.6.3; scape long, cylindrical, nearly equal to pedicel, annellus and the first 2 funicular segments combined; pedicel about 0.16 of scape; annellus about 0.50 of pedicel; first funicular segment longest; other funicular segments subequal; club about 0.66 of scape; terminal segment about 1.50 times preceding segment; pronotum 2 times as wide as long, closely rugose, clothed with short dense brown pubescence; mesonotum about 1.50 times as long as pronotum; parapsidal furrows complete; punctation as on pronotum; scutellum convex, with punctation larger than on mesonotum; propodeum with 2 furrows laterally in front, furrows being finely transversely carinated; rest of propodeum coarsely reticulated; mesopleural impression with a carina in the middle, in front reticulately striate, behind transversely striate; hind coxa long, rugosely punctate; femur shorter than coxa, rugosely punctate with a large basal tooth followed by fine serrations; hind tibia with a tooth basally outside; fore wings about 3 times as long as wide; slightly clouded yellowish; veins *sm : m* ratio 145 : 100; *st* very short and *pm* absent; petiole long, slender, longitudinally sulcate and carinate and equal to the rest of abdomen; the abdomen compressed, first tergite largest and covering most of the dorsum.

Type locality Port Blair (Andaman Islands)

Epitranus muzafferi (Mani & Kurian)

1953 *Anacryptus muzafferi*, Mani & Kurian, *Indian J. Ent.*, 15 : 2.

Male : Length 6.00 mm. Body dark reddish-brown to black; thorax black. Head viewed from above reniform, transverse slightly over 2 times as wide as long, rugosopunctate; interocellar space about 3 times the front ocellar space and about 1.50 times the ocellocular space; vertex emarginate; occiput concave; head viewed from front triangular, with the clypeus very conspicuous and snout-like; scrobes transversely striate; rest of face rugosopunctate, sparsely pubescent; gena slightly less than eyes; eyes bare; scape long, cylindrical, slightly incrassate apically and not reaching to the front ocellus; pedicel short, about 0.12 of scape, much thinner basally than apically; annellus about 0.66 of pedicel and more slender; first funicular segment slightly longer than pedicel, other funicular segments subequal; terminal antennal segment about 1.50 times as long as the preceding segment; pronotum rugosopunctate; mesonotum sculptured like

pronotum; parapsidal furrows complete, well developed; scutellum prominently convex, with coarser punctation; propodeum short, about 0.50 of scutellum, reticulately sculptured, with distinct and sinuate median longitudinal carina; mesopleura with femoral impression transversely carinate; hind coxae elongate and swollen basally; femur subequal to coxa, with a prominent tooth basally and finely serrate for the rest; hind tibia shorter than femur, with a tooth basally outside and spined apically; veins *sm* about 1.50 times vein *m; st* very short, *pm* absent; petiole slender, more than 0.50 of the rest of abdomen, abdomen compressed; second tergite covers most of abdomen.

Type locality Delhi

Epitranus raoi (Mani & Kurian)

1953 *Anacryptus raoi,* Mani & Kurian, *Indian J. Ent.*, 15 : 4.

Male Length 3.50 mm. Body reddish-brown; ocelli black; antennae concolourous with body; tegulae yellowish-brown; coxae and femora slightly darker than rest of legs.

Head viewed form above transverse, 2.50 times as wide as long; ocellocular space 1.50 times the front ocellar space and about 0.50 of the interocellar space; eyes bare; head viewed from front triangular, clypeus normal; antennae inserted close to the mouth; face flat, with a slight depression in the middle, finely leathery-punctate in the middle and rugosopunctate elsewhere; scape not quite reaching front ocellus; gena slightly less than length of eye; scape long, slender, cylindrical, subequal to the funicle; pedicel short, about 0.20 of the scape; annellus short, about 0.25 of the first funicular segment; club with 2 segments, stouter than the rest of antennae; terminal segment about 1.50 times the preceding segment; pronotum transverse, rugosopunctate; parapsidal furrows complete; mesonotum rugosopunctate; scutellum convex, rugosopunctate with the punctation somewhat coarser than on mesonotum; propodeum short, with a few distinct longitudinal carinae connected together by fine transverse carinulae, giving a reticulate appearance; mesopleura with a fine carina in the middle giving off on either side transverse carinulae; hind coxa equal to femur; tibia with an apical tooth externally; femur not much swollen, with a large basal tooth followed by fine serrations; veins *sm : m* ratio 150 : 100; *st* very short; *pm* absent; petiole much shorter than the rest of abdomen; second tergite much larger than others and nearly equal to petiole.

Type locality : Agra

Epitranus sontakayi (Mani & Kurian)

1953 *Anacryptus sontakayi,* Mani & Kurian, *Indian J. Ent.*, 15 : 4.

Male Length 5.00 mm. Body reddish-brown; face with a black longitudinal band in the middle.

Head viewed form above 2.50 times as wide as long; interocellar space 4 times the ocellocular space and about 0.60 of the front ocellar space; eyes bare; viewed from the front nearly triangular; clypeus nearly spatulate; antennae with 12 segments: 1.1.1.7.2; scape equal to pedicel, annellus and first 3 funicular segments combined; annellus nearly equal to about 0.50 of pedicel; funicular segments cylindrical and subequal; terminal segment a little longer the preceding segment; pronotum as wide as mesonotum, with a tuft of pubescence in front in the middle, sparsely, shallowly and broadly punctate; mesonotum darker than pronotum; parapsidal furrows well developed; scutellum convex, rounded behind and with a few large punctae; propodeum equal to scutellum, reticulately carinate; mesopleura with the femoral impression transversely carinate; hind coxae as long as femur; femur swollen, with a large tooth followed by fine serrations; hind tibia with one tooth at base outside and longer than tarsus; tarsi with 5 segments; claw simple; fore wings about 3 times as long as wide; veins *sm : m* ratio 129 : 100; *st* very short and *pm* absent; petiole somewhat longer than the rest of abdomen, with longitudinal carinae all round; second tergite largest and punctate behind.

Type locality : Multai (Betul) Madhya Pradesh

Epitranus keralensis (Mani & Dubey), *Nom. Nov.*

(Fig. 83)

1974 *Chalcitella malabarensis,* Mani & Dubey, *Mem. School Ent.*, 3 : 24 (preoccupied)

Female : Length 3.00 mm. Body brownish-black, eyes and ocelli dark brown; antenna black, except for the ferruginous-brown scape, pedicel, annellus and first 2 funicular segments; fore and middle legs dark brown; hind leg dark brown except yellowish-brown tarsi, femoral teeth black, inner carina of the hind tibia black; petiole and abdomen dark reddish-brown; first tergite brownish-black above; wings hyaline, veins dark brown.

Head veiwed from above length : width 33 : 100, head to thorax 100 : 74; ocellocular space equal to ocellar diameter, interocellar space 2 times ocellocular space, front ocellar space 2 times ocellar diameter; vertex partly with small, obscure, shallow punctae, otherwise smooth and shiny; head viewed from front width to length 100 : 67; frons with distinctly larger and closer punctae than vertex; scrobe impressed, with fine transverse striolations; head viewed from side height to width 100 : 52, gena 0.50 of maximum eye length, postorbital space more closely and deeply punctate; antennae slender, segments 11: 1.1.1.7.1; scape 0.30 of antenna, almost 6 times as long as thick; pedicel about 0.20 of scape; flagellum distinctly thickened apically; annellus 3 times as wide as long; first funicular segment 2.50 times annellus, second subequal to first, funicular segments 3-5 subequal, sixth and seventh subequal, as long as thick; club solid,

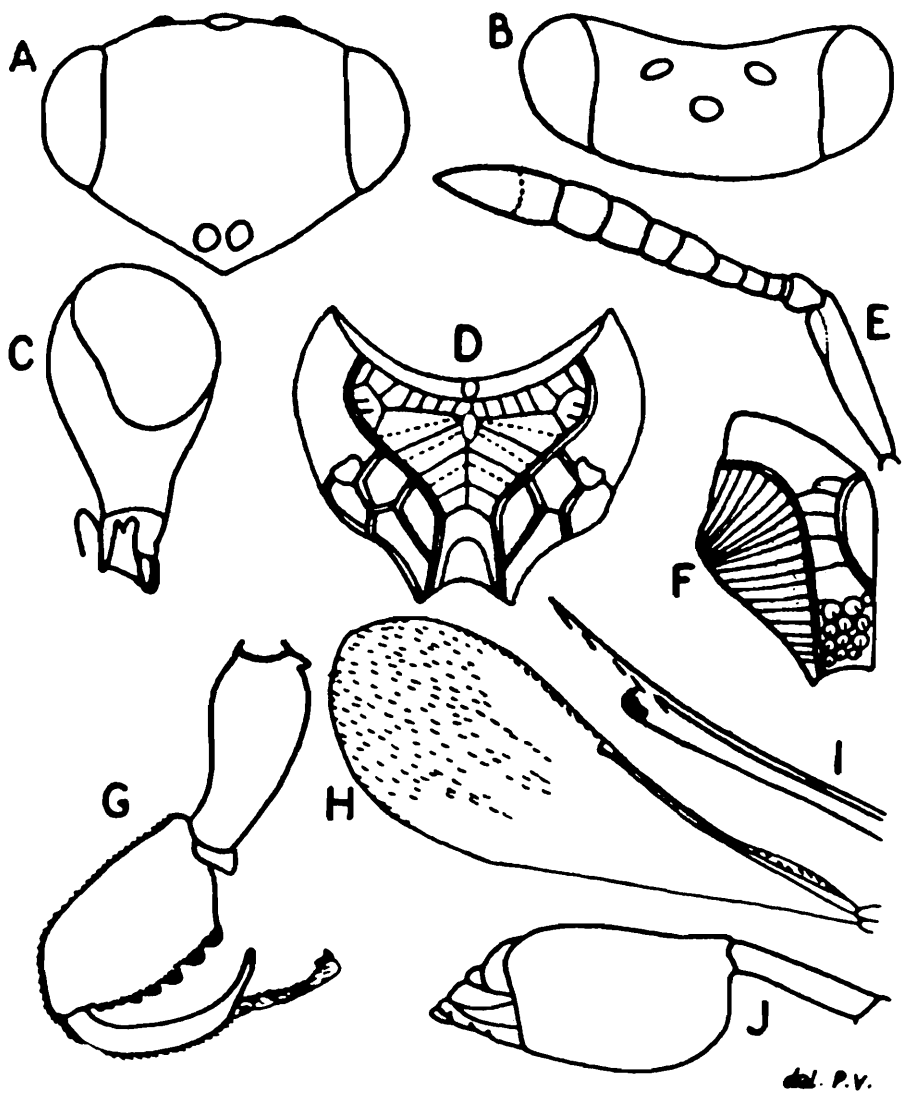

FIG. 83. *Epitranus keralensis* (Mani & Dubey), female : A. Head in front view; B. Head in dorsal view; C. Head in profile view; D. Propodeum; E. Antenna; F. Mesopleura; G. Hind leg; H. Fore wing; I. Stigmal area of fore wing; J. Abdomen.

with spurious marking at basal 0.33, equal to the preceding 3 segments combined, and about 2.50 times as long as thick.

Pronotum transverse, 5 times as wide as long, punctae distinctly larger, deeper and closer than on mesonotum; mesonotum with smaller shallow punctae, interspace equal to the diameter of punctae; parapsidal furrow complete, well developed; scutellum with deeper, almost contiguous punctae, larger than on mesonotum; fore wing length : width 100 : 34; vein *sm : m* ratio 100 : 76, *pm* absent, *st* short; hind leg clothed with silvery-white pubescence, coxa length :

thickness 100 : 45, with obscure shallow punctae basally on outside, subequal to petiole; femur 1.20 times coxa, length : width 100 : 50 with a larger and 3 smaller teeth below, closely finely punctate; tibia curved, slightly longer than femur; tarsus 0.50 of tibia, metatarsus 0.16 of tarsus, second segment subequal to metatarsus, third segment 0.80 of the second, fourth 0.50 of the second, fifth 3.50 times the preceding; petiole slender, longitudinally grooved, about 5 times as long as thick, 0.50 of abdomen; abdomen viewed from above strongly compressed, viewed from side length to width 100 : 50, with fine micropunctae, otherwise shiny.

Type locality ; Moozhiar-Tekkady Road (Cardamom Hills)

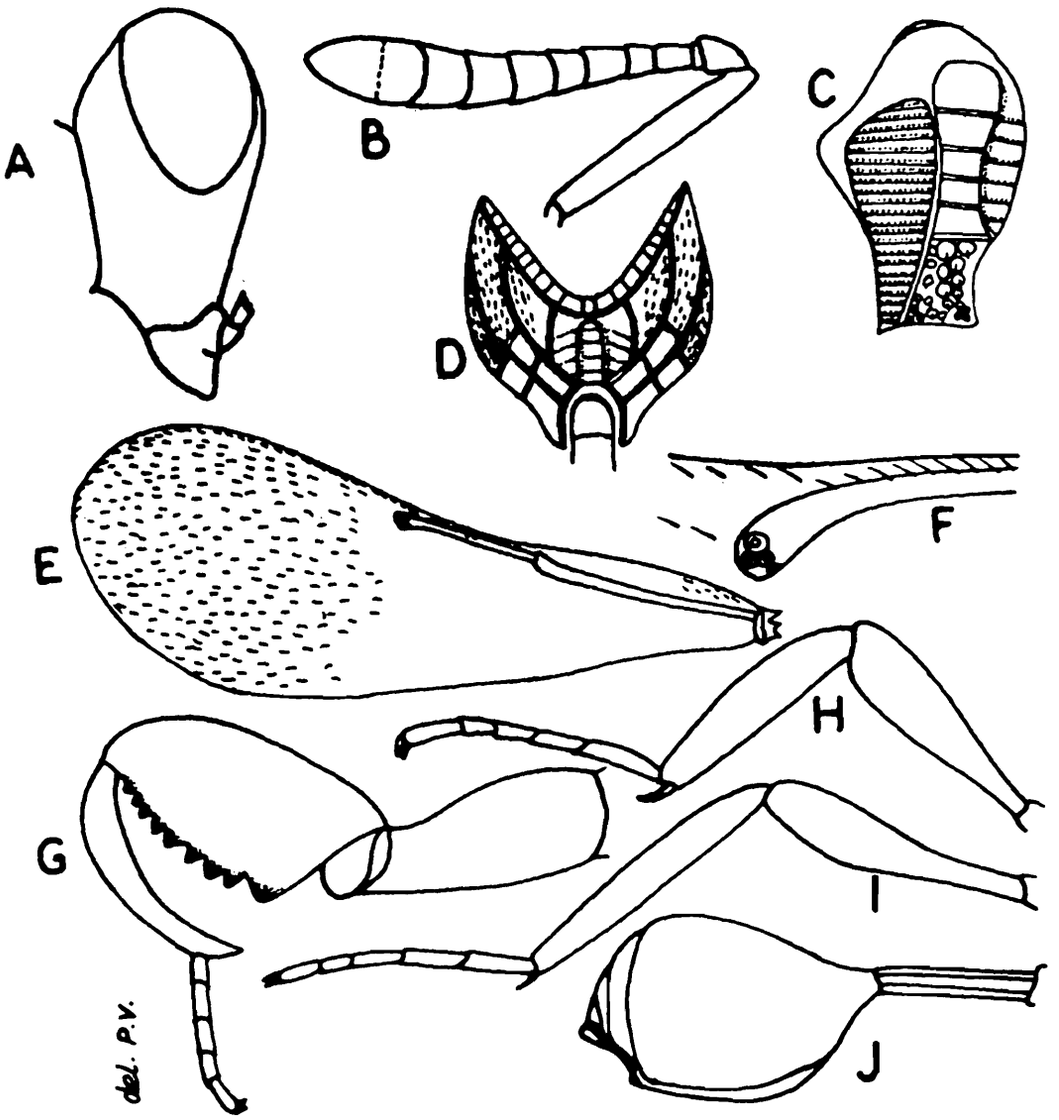

FIG. 84. *Epitranus annexia* (Mani & Dubey), female : A. Head in profile view; B. Antenna; C. Mesopleura; D. Propodeum; E. Fore wing; F. Stigmal area of fore wing; G. Hind leg; H. Fore leg; I. Middle leg; J. Abdomen.

Epitranus annexia (Mani & Dubey)

(Fig. 84)

1973 *Chalcitella annexia,* Mani & Dubey, *Mem. School Ent.*, 2 : 7.

Female : Length 3.00 mm. Body dark ferruginous-brown; vertex and upper 0.50 of frons black-ferruginous, lower 0.50 of frons bright ferruginous-brown; antennae, fore and middle legs dark brown; hind legs, except reddish-black coxae, dark brown; pronotum bright reddish-brown; mesonotum and scutellum black; petiole reddish-brown; abdomen black; wings hyaline.

Head viewed from above width to length 33 : 100; width to thorax width 100 : 70; ocellocular space 1.75 times ocellar diameter, interocellar space 2 times ocellocular space, front ocellar space subequal to ocellocualr space; vertex with very minute obscure, shallow, scattered punctae, otherwise smooth; head viewed from front width to length 100 : 55; frons smooth; with reticulate microsculpture; scrobe only obscurely impressed, with very fine, transverse, striolate microsculpture; head viewed from side height to width 100 : 60; gena slightly more than length; postorbital space with very fine reticulation, otherwise smooth, margin moderately carinate; antennae stouter apically than basally, segments 11: 1 1.1.7.1; scape about 0.50 of antenna, 7 times as long as thick; pedicel nearly 1.50 times the first funicular segment; annellus 3 times as wide as long; first and second funicular segments subequal; third to six subequal but each becoming slightly wider toward apex; seventh distinctly longer than preceding; club subequal to preceding 3 funicular segments combined and 2 times as long as thick, with one spurious suture at the basal 0.33.

Pronotum transverse, about 4 times as wide as long, 0.50 of thorax; with distinctly large, deeper and closer punctae than on mesonotum; parapsidal furrows complete, mesonotum shallow, small punctae, separated by their own diameter; scutellum contiguously punctate; fore wing length : width 100 : 36; veins *sm : m* ratio 192 : 100, *pm* absent, *st* very short; fore femur clavate; tibia slender, subequal to femur; tarsus slightly longer than tibia; metatarsus 0.30 of the third; fifth segment slightly less than preceding 2 segments combined; middle femur moderately stout apically; tibia slightly over femur; tarsus 0.90 of tibia; metatarsus about 0.25 of tarsus, second segment slightly less than metatarsus; third 0.90 of the second, fourth 0.70 of the third, fifth 1.39 times the preceding; hind leg clothed with very fine silvery-white pubescence; coxa with a few obscure and shallow punctae above, 2.50 times as long as thick femura; little longer than coxae, with 6 large basal and 3 smaller apical teeth; tibia curved, subequal to femur; tarsus slightly less than 0.50 of tibia, metatarsus 0.17 of tarsus; second segment 1.40 times metatarsus, third slightly less than second; fourth 0.70 of the third, fifth slightly less than preceding 2 segments combined.

Abdomen with longitudinally grooved petiole, slender, nearly 6 times as long as thick, about 0.60 of abdomen; abdomen viewed from above compressed, viewed from side length to width 100 : 68, smooth, first tergite 0.80 of abdomen.

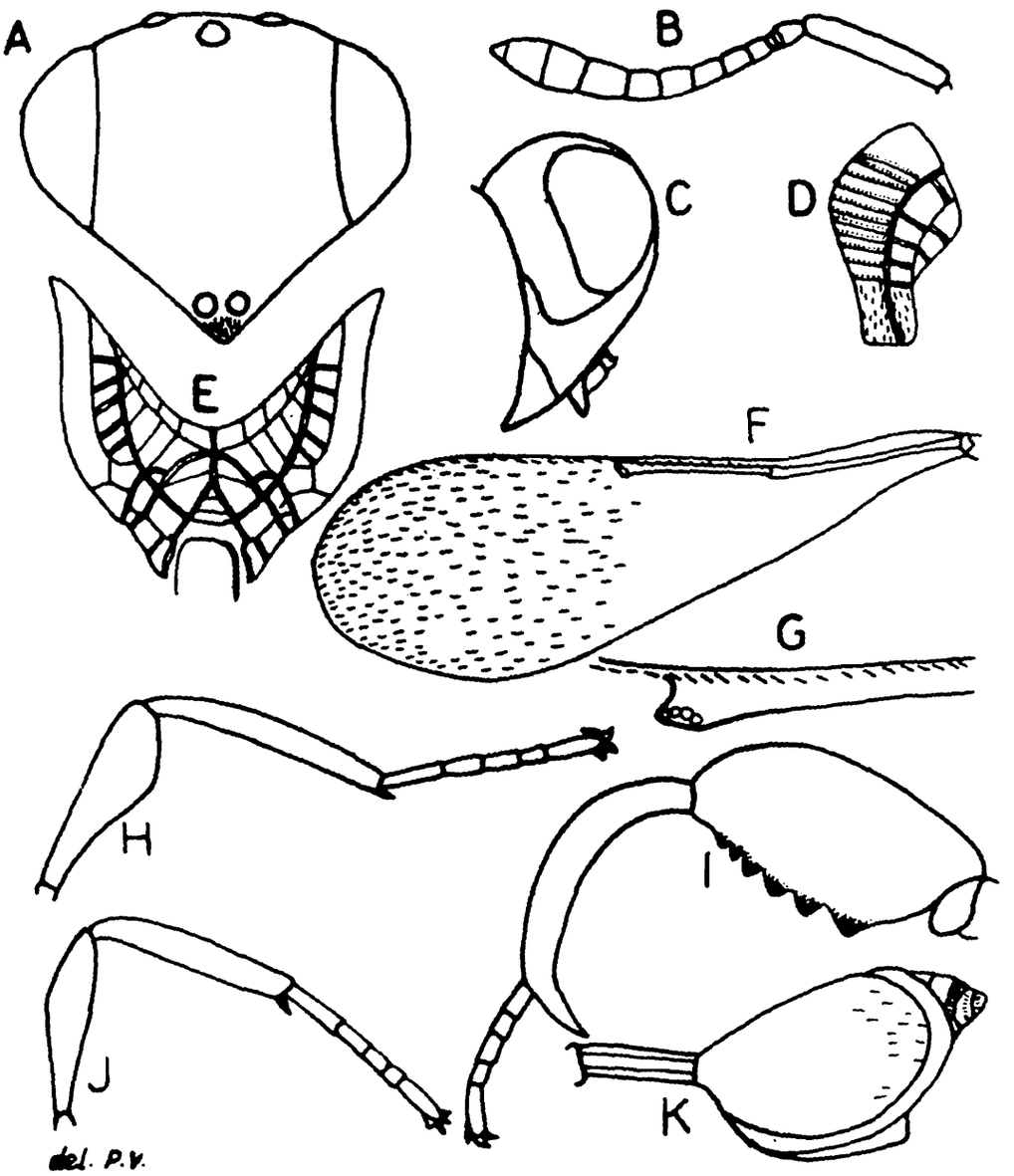

FIG. 85. *Epitranus ultima* (Mani & Dubey), female : A. Head in dorsal view; B. Antenna; C. Head in profile view; D. Mesopleura; E. Propodeum; F. Fore wing; G. Stigmal area of fore wing; H. Middle leg; I. Hind leg; J. Fore leg; K. Abdomen.

Epitranus ultima (Mani & Dubey)

(Fig. 85)

1973 *Arretocera ultima*, Mani & Dubey, *Mem. School Ent.*, 2 : 28.

Female : Length 2.00 mm. Body black; eyes brownish-black; ocelli grey; antenna brown; fore and middle legs brown; hind legs, except black coxa and femur, brown; hind femur with teeth black; petiole and first tergite of abdomen black, rest abdomen dark brown.

Head viewed from above length : width 50 : 100, subequal to thorax width; ocellocular space 1.50 times ocellar diameter; interocellar space a little over ocellocular space; front ocellar space subequal to ocellocular space; vertex with minute, obscure shallow and scattered punctae, otherwise nearly smooth; head viewed from front width to length 100 : 85; frons sculptured like vertex; scrobe very faintly impressed, with transverse striolations; viewed from side height to width 100 : 60; gena about 0.66 of eye, with few obscure scattered punctae; postorbital space smooth and margin carinate, practically non-punctate; antennae moderately stout, short, about 1.70 times head length; segments 13 : 1.1.1.7.3; scape about 0.45 of antenna, nearly 6 times as long as thick; pedicel about 2.25 times the first funicular segment and subequal to second; annellus minute about 4 times as thick as long; first funicular segment shortest, almost slightly larger than annellus; second and third subequal; fourth to sixth subequal; seventh longest, 1.50 times preceding; club slightly shorter than 3 funicular segments combined, 2.70 times as long as wide, triarticulate, first segment 0.80 of last funicular segment, the second slightly longer than first, terminal segment conical, 0.40 of preceding.

Pronotum about 4 times as wide as long, with distinctly large, deep and close punctae; parapsidal furrows complete; mesonotum with punctae as on pronotum; scutellum more closely, contiguously punctate; fore wing length width 100 : 39; veins *sm* : *m* ratio 152 : 100, *pm* absent, *st* short; fore femur clavate, tibia slightly longer than femur, slender; tarsus subequal to tibia; metatarsus 0.33 of tarsus; second segment 0.60 of metatarsus; third 0.70 of the second; fourth 0.60 of the third; fifth segment 3 times preceding; middle femur fusiform, tibia 1.20 times femur; tarsus slightly shorter than tibia; metatarsus 0.27 of tarsus; second segment 0.60 of metatarsus; third subequal to second; fourth 0.70 of the third; fifth about 2 times preceding; hind leg clothed with white pubescence; coxa slightly over 2 times as long as thick, subequal to abdominal petiole; femur with obscure, minute punctae, 1.30 times coxa, as long as thick, basal 3 teeth equally large, fourth smaller, fifth and sixth minute; tibia curved, nearly 1.20 times femur; tarsus 0.50 of metatarsus; third 1.50 times the second; fourth 0.70 of the third; fifth 2.50 times preceding.

Petiole longitudinally grooved, slender, nearly 4.60 times as long as wide, about 0.40 of abdomen; abdomen viewed from above compressed, viewed from side length width 100 : 60, smooth; first tergite with scattered hairs on apical 0.25.

Type locality : Tanjore; Vannar Bank forest

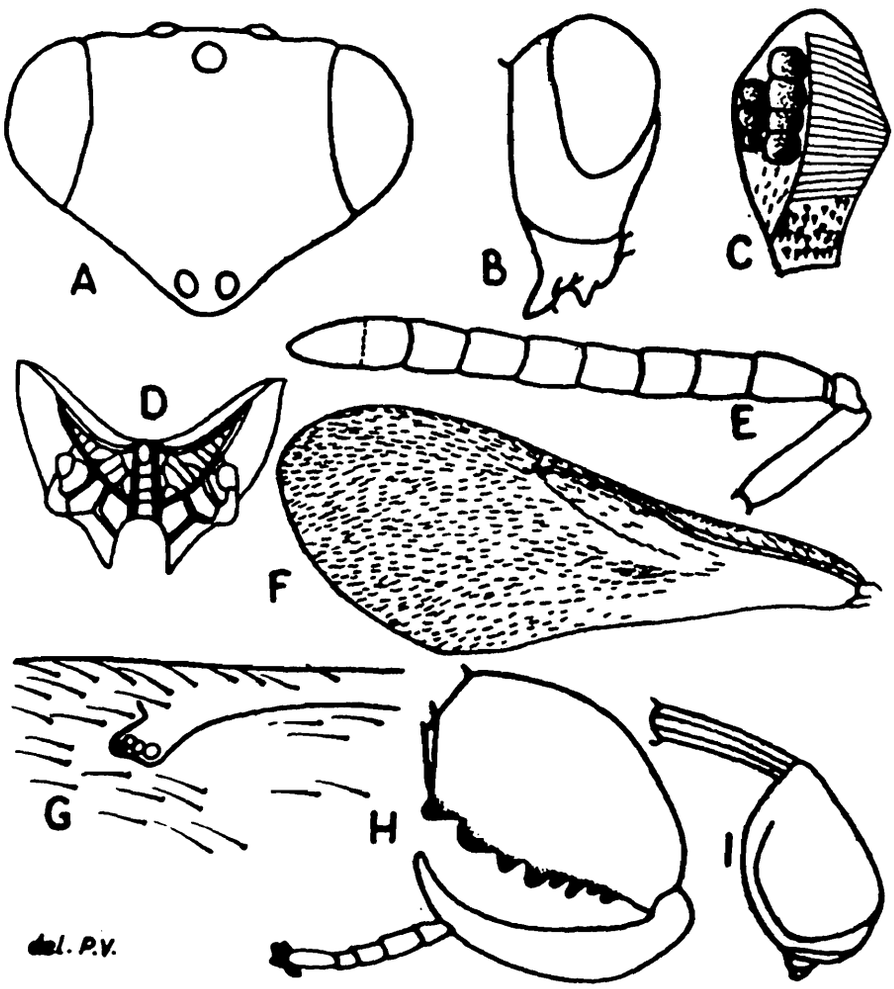

FIG. 86. *Epitranus dubeyi* (Mani & Dubey), female : A. Head in front view; B. Head in profile view; C. Mesopleura; D. Propodeum; E. Antenna; F. Fore wing; G. Stigmal area of fore wing; H. Hind leg; I. Abdomen.

Epitranus dubeyi (Mani & Dubey) *Nom. nov.*

(Fig. 86)

1974 *Chalcitella nilamburensis,* Mani & Dubey, *Mem. School Ent.,* 3 : 26 (preoccupied)

Female : Length 3.00 mm. Body black; eyes and ocelli dark brown; antenna black, except for the dark brown scape, pedicel and annellus; fore and middle legs reddish-brown; hind leg black, except trochanter, tibia and tarsus; petiole and abdomen black, except for the brown apical 0.25, tegulae dark brown; wings hyaline.

Head viewed from above length : width 43 : 100, head to thorax 100 : 83; ocellocular space 1.50 times the ocellar diameter interocellar

space equal to 2 ocellar diameters, front ocellar space 1 75 times ocellar diameter, vertex with small, obscure shallow punctae, otherwise finely striate; head viewed from front width to length 100 : 68; frons with distinctly larger and closer punctae than vertex; scrobe impressed, with fine transverse striolations; head viewed from side height to width 100 : 55, gena 0.50 of the eye, postorbital space more closely and deeply punctate; antennae slender, with 11 segments : 1.1.1 7.1; scape 0.20 of antenna, almost 5 times as long as thick; pedicel about 0.22 of scape; annellus about 3 times as wide as long; first funicular segment longest, slightly more than 2 times pedicel; segments 2-6 subequal; club solid, with spurious marking at basal 0.37, slightly longer than the preceding 2 segments combined; scutellum more closely and deeply punctate, punctae almost contiguous; fore wing length : width 100 : 40; veins *sm* : *m* ratio 100 : 62, *pm* absent, *st* sessile; hind leg clothed with silvery-white pubescence, coxa length : width 100 : 42, with obscure, shallow punctae, subequal to petiole, femur subequal to coxa, length : width 100 : 62; with 4 large, 2 median and 2 smaller teeth below, closely finely punctate; tibia curved, slightly longer than femur, tarsus 0.50 of tibia, metatarsus 0.17 of tarsus, second segment 1.30 times metatarsus, third segment 0.90 of the second, fourth segment 0.50 of the third, fifth segment about 2 times the fourth.

Petiole longitudinally grooved, slender, about 5 times as long as thick, 0.70 of abdomen; abdomen viewed from above strongly compressed, viewed from side length to width 100 : 60, tergite smooth and shiny.

Type locality : Nilambur (Malabar)

Epitranus borivilius (Mani & Dubey)

(Fig. 87)

1973 *Chalcitella borivilia,* Mani & Dubey, *Mem. School Ent.,* 2 : 8.

Female : Length 3.50 mm. Body black; eyes and ocelli blackish-brown; antenna dark brown; fore and middle legs reddish-brown; hind leg black, except the dark reddish-brown tibia and tarsus; petiole and first tergite black, rest of abdomen dark reddish-brown; wings hyaline.

Head viewed from above length : width 50 : 100, width to thorax width 100 : 90; ocellocular space 1.25 times ocellar diameter, interocellar space about 1.50 times ocellocular space, front ocellar space subequal to ocellocular space; vertex with very minute, obscure, shallow, scattered punctae, otherwise smooth; viewed from front height : width 80 : 100; frons smooth like vertex; scrobe with very fine transverse striolations; head viewed from side height to width 100 : 60, gena to eye 60 : 100; postorbital space smooth, margin carinate; antennae moderately stout apically, segments 11 : 1.1.1.7.1;

scape about 0.40 of antenna, nearly as long as thick; pedicel 2 times the first funicular segment; annellus nearly 3 times as wide as long; the first funicular segment shortest; second segment slightly longer than the first; third segment 1.60 times second; fourth subequal to third and fifth; sixth 1.40 times the fifth and subequal to seventh; club solid, slightly shorter than the preceding 3 segments combined, with a spurious marking at basal 0.33.

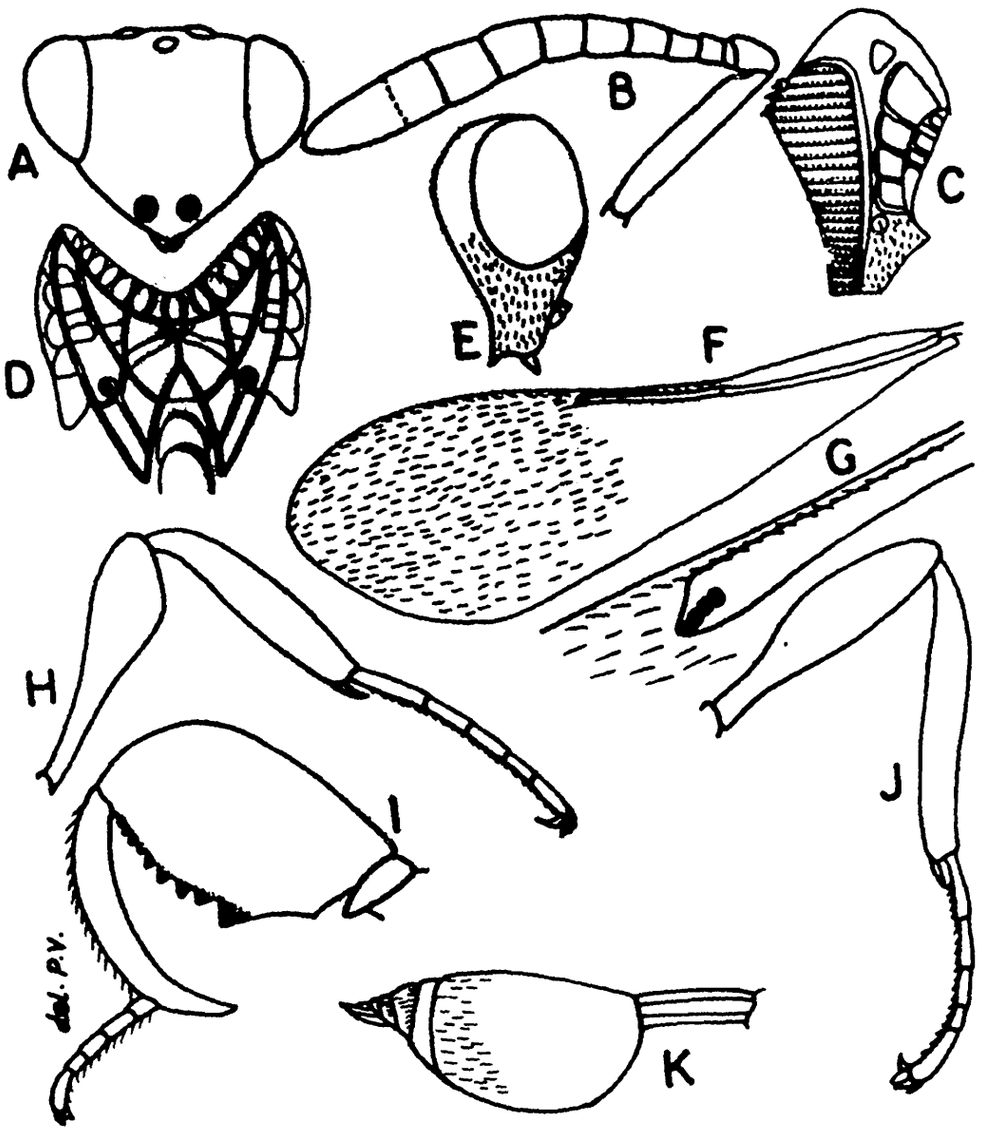

FIG. 87. *Epitranus borivilius* (Mani & Dubey), female : A. Head in front view; B. Antenna; C. Mesopleura; D. Propodeum; E. Head in profile view; F. Fore wing; G. Stigmal area of fore wing; H. Middle leg; I. Hind leg; J. Fore leg; K. Abdomen.

Pronotum transverse, 3 times as wide as long about 0.33 of thorax, with distinctly large, deep and close punctae; parapsidal furrows complete; mesonotum with deep and large punctae separated

from each other by their own diameter; scutellum contiguously punctate; fore wing length : width 100 : 32; veins *sm m* ratio 166 : 100; *pm* absent, *st* very short; fore femur clavate; tibia slender and slightly longer than femur; tarsus nearly 0.80 of metatarsus; third segment 0.80 of the second; fourth 0.50 of the third, fifth equal to 3 preceding; middle femur fusiform; tibia slender, slightly shorter than the femur; tarsus slightly longer than tibia; metatarsus 0.33 of tarsus; second segment 0.66 of metatarsus; third subequal to second; fourth 0.70 of the third, fifth 1.66 times the preceding; hind legs clothed with white pubescence; coxa with a few obscure, shallow, reticulate punctae above, 2.50 times as long as thick, subequal to abdominal petiole; femur with obscure, minute, widely separated punctae, slightly longer than coxa, 2 times as long as thick, with 5 large basal and 4 smaller apical teeth; tibia curved, subequal to femur; tarsus nearly 0.50 of tibia; metatarsus 0.15 of tarsus, second segment 1.50 times metatarsus; third segment 0.80 of the second; fourth 0.80 of the third; fifth equal to the 2 preceding.

Petiole longitudinally grooved, slender, nearly 4 times as long as thick, about 0.40 of abdomen; viewed from above; abdomen compressed; viewed from side length to width 100 : 50; smooth first tergite with scattered hairs on the apical 0.25.

Type locality Borivili National Park, Bombay (Krishnagiri Hill)

Epitranus monticolus (Mani & Dubey)

(Fig. 88)

1973 *Chalcitella monticola,* Mani & Dubey, *Mem. School Ent.,* 2 : 10.
1974 *Chalcitella monticola,* Mani & Dubey, *Mem. School Ent.,* 3 : 24.

Female : Length 3.00 mm. Body black; eyes brownish-black; ocelli grey; antenna dark brown, except black funicle and club; fore and middle legs dark brown, hind legs black, except dark brown trochanter, tibia and tarsus; petiole and abdomen black; wings hyaline, veins brown.

Head viewed from above length : width 44 : 100, as wide as thorax; ocellocular space 1.50 times ocellar diameter, interocellar space about 2 times the ocellocular space, front ocellar space subequal to ocellocular space; vertex with very minute, shallow, obscure, scattered punctae, otherwise smooth; head viewed from front height : width 75 : 100; frons with scattered, shallow punctae; scrobe with deep transverse striolation; head viewed from side height to width 100 : 46, gena to eye 60 : 100; postorbital space nearly smooth and margin carinate; antennae slender, segments 11 : 1.1.1 7.1; scape about 0.25 of antenna, about 7 times as long as thick; pedicel about 0.66 of the first funicular segment, annellus nearly 3 times as wide as long; first and second funicular segments

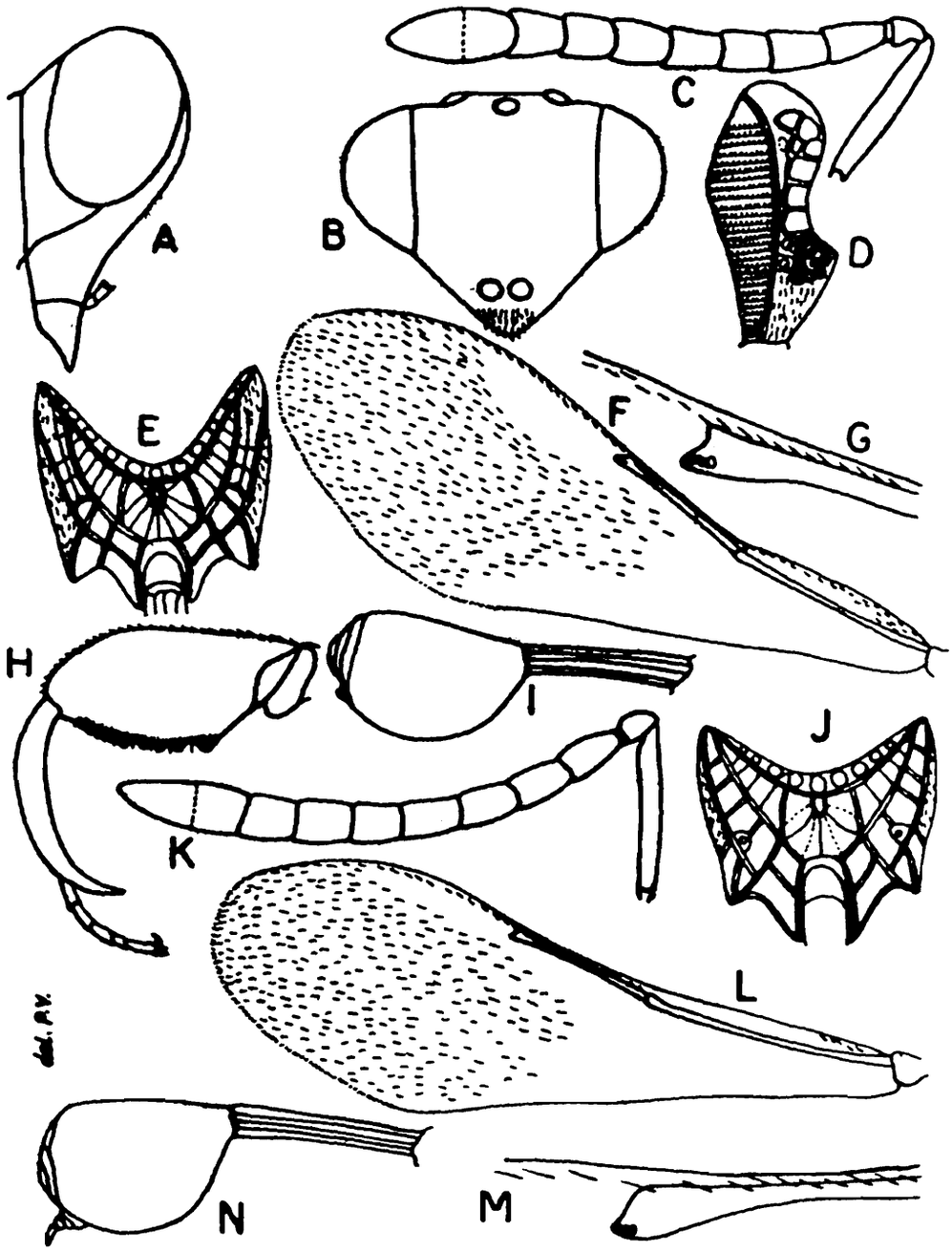

FIG. 88. *Epitranus monticolus* (Mani & Dubey) : A-I. Female : A. Head in profile view; B. Head in front view; C. Antenna; D. Mesopleura; E. Propodeum; F. Fore wing; G. Stigmal area of fore wing; H. Hind leg; I. Abdomen; J-N. Male : J. Propodeum; K. Antenna; L. Fore wing; M. Stigmal area of fore wing; N. Abdomen.

subequal, third 0.80 of the second; fourth segment subequal to third; fifth segment 1.20 times the fourth and equal to the second; sixth and seventh segments subequal; club nearly 1.25 times the preceding 2 funicular segments combined, and about 2 times as long as thick.

Pronotum transverse 3 times as wide as long, with large, deep contiguous punctae; parapsidal furrows complete; mesonotum with punctae shallow, separated by their own diameter; scutellum with contiguous punctae; fore wing length width 100 : 35; veins *sm* : *m* ratio 125 : 100, *pm* absent, *st* short; fore femur clavate; tibia slightly longer than femur; tarsus about 0.90 of tibia, metatarsus 0.33 of tarsus; second segment 0.70 of metatarsus, third segment 0.80 of the second; fourth 0.60 of the third, fifth about 2 times the preceding; middle femur fusiform, tibia subequal to femur; tarsus 0.60 of tibia; metatarsus about 0.27 of tarsus, second segment 0.90 of metatarsus, third segment 0.50 of the second, fourth subequal to third, fifth equal to the preceding 2 segments combined; hind leg densely clothed with silvery-white pubescence, coxa with moderately widely separated, minute punctae, 2.60 times as long as thick, slightly longer than abdominal petiole; femur with obscure and widely separated punctae, slightly longer than coxa, 2 times as long as thick, with 1-5 large, 6-8 smaller, 9 minute teeth; tibia curved, subequal to femur; tarsus 0.70 of tibia; metatarsus nearly 0.23 of tarsus; second segment 0.80 of metatarsus, third segment subequal to second; fourth 0.60 of the third; fifth 2.30 times the preceding.

Petiole slender longitudinally grooved, nearly 5 times as long as wide, 0.75 of abdomen; viewed from above abdomen compressed, viewed from side length to width 100 : 61; first tergite with few scattered hairs on the apical 0.25 margin.

Male Length 3.00 mm. Body colour as in female; antenna as in female, segments 11 : 1.1 1 7 1; club with a spurious marking in the middle; scape slightly less than 0.25 of antenna, about 7 times as long as thick; pedicel 0.70 of the first funicular segment, annellus minute, nearly 3 times as thick as long; funicular segments 1-4 subequal, 5-7 subequal; club slightly longer than preceding 2 segments combined, nearly 2.70 times as long as thick; hind leg as in female, except the widely separated, deep and obscure punctae.

Petiole slender, longitudinally grooved, about 6 times as long as thick; slightly longer than petiole; viewed from side length to width 100 : 66; rest as in female.

Type locality Khandala (Western Ghats)

Distribution Western Ghats : Nilgiri Hills, Khandala, Cardamon Hills, etc.

Epitranus sancti-johani (Mani & Dubey)

(Fig. 87)

1973 *Arretocera sancti-johani*, Mani & Dubey, *Mem. School Ent.*, 2 : 23.

Male Length 3.50 mm. Body black; eyes dark grey, ocelli black; antennae dark ferruginous-brown; head black, sides of

pronotum and scapula and metapleura dark ferruginous; legs dark ferruginous-red and hind coxa dark ferruginous-black; clypeus and gena ferruginous-black; petiole dark ferruginous-red; dorsum of abdomen black; hind coxa ferruginous-black; femoral teeth black; wings hyaline, vein dark brown.

Head viewed from above width to length 37 : 100, vertex with matt surface, sculpture obscure; ocellocular space equal to ocellar diameter; interocellar space nerly 2.50 times ocellar diameter; front ocellar space equal to ocellar diameter; head viewed from front width to length 100 : 78; frons nearly smooth, with a few shallow obscure punctae at side, which become more prominent and closer below in the middle, with microscopic striolation; head viewed from side height to width 54 : 100, post-temporal and malar spaces coarsely rugose, with a conspicuous transverse carina a little below eye; antennae moderately slender, 1.40 times the head length, segments 13 : 1.1.1.7.3; scape a little over 0.50 of antenna, nearly 7 times as long as thick; pedicel slightly longer than first funicular segment; annellus 2.70 times as wide as long; first funicular segment 0.30 of the second; second slightly shorter than third; third subequal to fifth; fourth subequal to second; sixth subequal to first and seventh; club 2.30 times as long as thick; first club segment subequal to the preceding segment, second 2 times the first, terminal segment minute, conical, 0.25 of the second.

Pronotum transverse, almost 3.40 times as wide long, nearly 0.20 of thorax; thorax covered with large coarse umbilicate contiguous punctae; mesonotum with punctae closer together than their own diameter; fore wing length to width 100 : 36; veins *sm* : *m* ratio 106 : 100, *pm* absent, *st* very short; fore femur moderately stout subapically; tibia slightly longer than femur; tarsus 0.90 of tibia; metatarsus about 0.40 of tarsus; second segment slightly over 0.50 of metatarsus; third segment slightly longer than fourth, fourth 0.60 of the fifth; terminal segment nearly 0.50 of metatarsus; middle femur distinctly longer, clavate subapically; tibia moderately slender; metatarsus nearly 0.33 of tarsus; second segment 0.80 of metatarsus; third 0.50 of the second; fourth slightly less than 0.50 of the third; terminal segment 2.70 times preceding; hind coxa as long as abdominal petiole; hind femur 1.40 times coxa, 2.30 times as long as thick, teeth 10.

Petiole 0.60 of abdomen, 6 times as long as thick, carinae obslete behind dorsally; abdomen viewed from side 1.25 times as long as thick, ratio 100 : 79.

Type locality Agra

Epitranus malabarensis (Mani & Dubey)

(Fig. 90)

1974 *Arretocera malabarensis,* Mani & Dubey, *Mem. School Ent.*, 3 : 28.

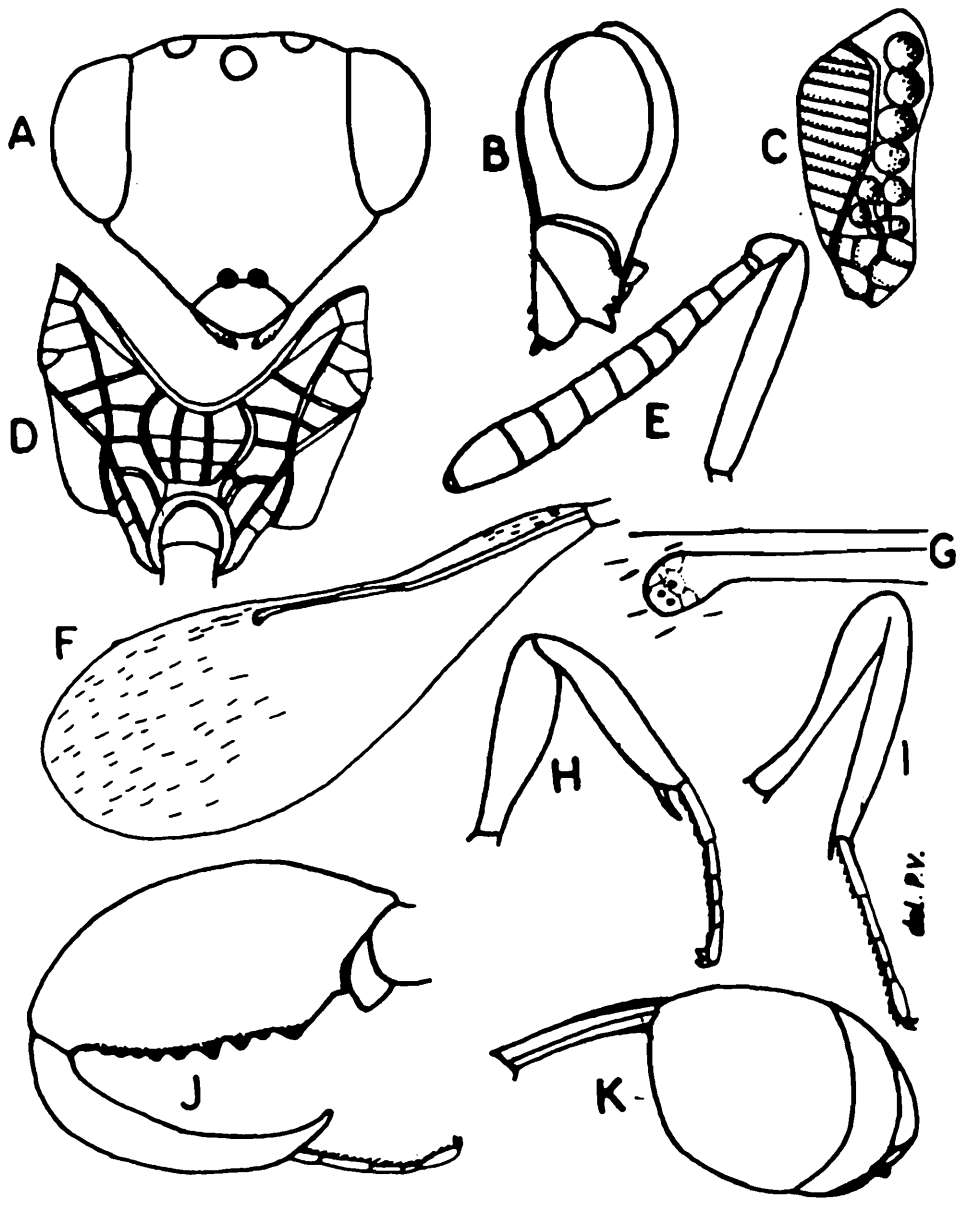

FIG. 89. *Epitranus sancti-johani* (Mani & Dubey), female : A. Head in front view; B. Head in profile; C. Mesopleura; D. Propodeum; E. Antenna; F. Fore wing; G. Stigmal area of fore wing; H. Fore leg; I. Middle leg; J. Hind leg; K. Abdomen.

Female : Length 3.50 mm. Body black; eyes and ocelli dark brown, antenna except for the ferruginous-brown scape, pedicel, annellus and first funicular segment, brownish-black; fore and middle legs ferruginous-brown, hind coxa and 0.75 of femur black, trochanter, tibia and tarsus dark brown, inner carina of the hind tibia black; femoral teeth black; tegula brown, petiole and abdomen black; wings hyaline, veins dark brown.

Head viewed from above length : width 37 : 100, slightly wider than thorax; ocellocular space equal to ocellar diameter, interocellar

space 2 times the ocellocular space, front ocellar space about equal to the ocellar diameter; vertex with small, obscure, shallow punctae, othewise finely reticulately transversely striate; viewed from front width to length 100 : 76; frons with larger punctae than vertex; scrobe impressed with transverse striolations; viewed from side height to width 100 : 50 gena 0.50 of the maximum eye length, postorbital space more closely punctate; antennae slender, segments 13 : 1.1.1.7.3; scape nearly 0.20 of antenna, almost as long as thick; pedicel about 0.20 of scape; annellus 4 times as wide as long; first funicular segment longest, nearly 2.30 times the pedicel; segments 2-5 subequal, sixth and seventh subequal; club equal to the preceding 2 segments combined, 2.70 times as long as thick, first segment slightly shorter than the last funicular segment, second 0.80 of the first, terminal segment conical, 0.60 of the preceding.

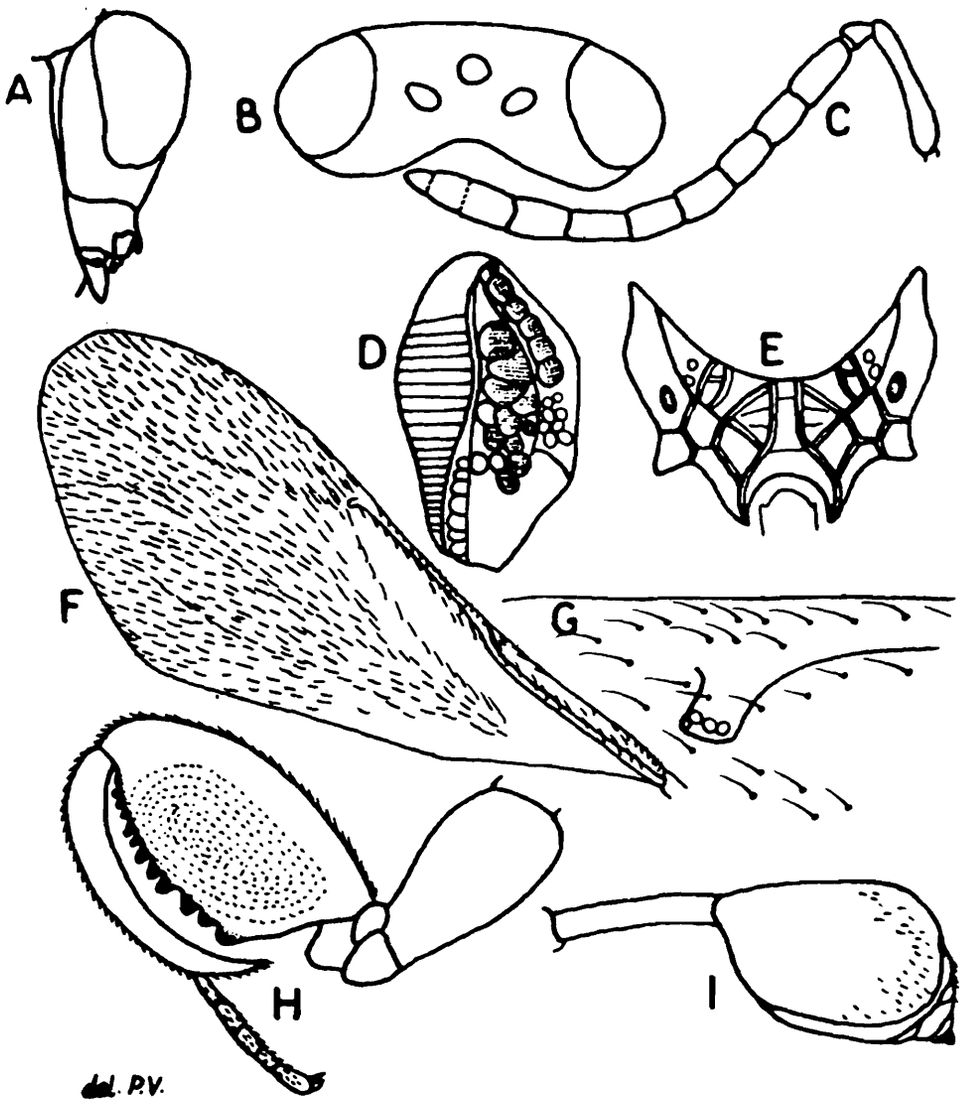

FIG. 90. *Epitranus malabarensis* (Mani & Dubey), female : A. Head in profile view; B. Head in dorsal view; C. Antenna; D. Mesopleura; E. Propodeum; F. Fore wing; G. Stigmal area of fore wing; H. Hind leg; I. Abdomen.

Pronotum transverse, 4 times as wide as long, punctae distinctly larger, deeper, closer than mesonotum; mesonotum with smaller shallow punctae, interspace less than diameter of punctae, parapsidal furrows complete, well developed; scutellum with deep almost contiguous punctae, larger than on mesonotum; fore wing length : width 100 : 39; veins *sm* : *m* ratio 132 : 100, *pm* absent, *st* short; hind leg clothed with silvery-white pubescence; coxa length : width 100 : 55, with obscure shallow punctae, subequal to abdominal petiole; femur 1.30 times coxa, length : width 100 : 49, with one large and 11 smaller teeth, sculpture closely finely punctulate; tibia curved, slightly longer than femur; tarsus about 0.50 of tibia, metatarsus 0.23 of the tarsus, second segment about 0.90 of metatarsus, third 0.70 of the second, fourth 0.80 of the third, fifth 2 times the fourth.

Petiole slender, longitudinally grooved about 5 times as long as thick and 0.60 of abdomen; abdomen strongly compressed; viewed from side length : width 100 : 64, tergite with fine micropunctae otherwise shiny.

Type locality : Nilambur (Western Ghats)

Epitranus ophiomontanus (Mani & Dubey)

(Fig. 91)

1973 *Arretocera ophiomontana,* Mani & Dubey, *Mem. School Ent.,* 2 : 18.

Female : Length 4.00 mm. Body black; eyes ocelli dark brown; antenna, except for the reddish-brown scape, pedicel, annellus and first funicular segment, brownish-black; fore and middle legs dark brown; hind coxa and femur black, trochanter, tibia and tarsus dark brown, inner carina of the hind tibia black; pronotum reddish-brown, rest of thorax black; petiole and abdomen black; femoral teeth black; wings hyaline, veins dark brown.

Head viewed from above length : width 33 : 100, almost as wide as thorax; ocellocular space equal to ocellar diameter; interocellar space nearly 2 times ocellocular spaces, front ocellar space nearly 2 times ocellocular spaces; vertex with small, obscure, shallow punctae, otherwise with fine reticulate microsculpture; viewed from front width to length 100 : 69; frons with larger punctae than vertex; scrobe impressed with transverse striolations, bordered by raised carina above; head viewed from side height to width 100 : 58; gena nearly 0.45 of eye; postorbital space more closely punctate, margin carinate; antennae slender, segments 13 : 1.1.1.7.3; scape nearly 0,42 of antenna, nearly 8 times as long as thick; pedicel nearly 0.70 of the first funicular segment; annellus about 4 times as wide as long; first funicular segment longest; second 0.75 of the first; third subequal to second; fourth slightly shorter than third; fifth subequal to fourth; sixth smaller than fifth and equal to seventh; club 2.40

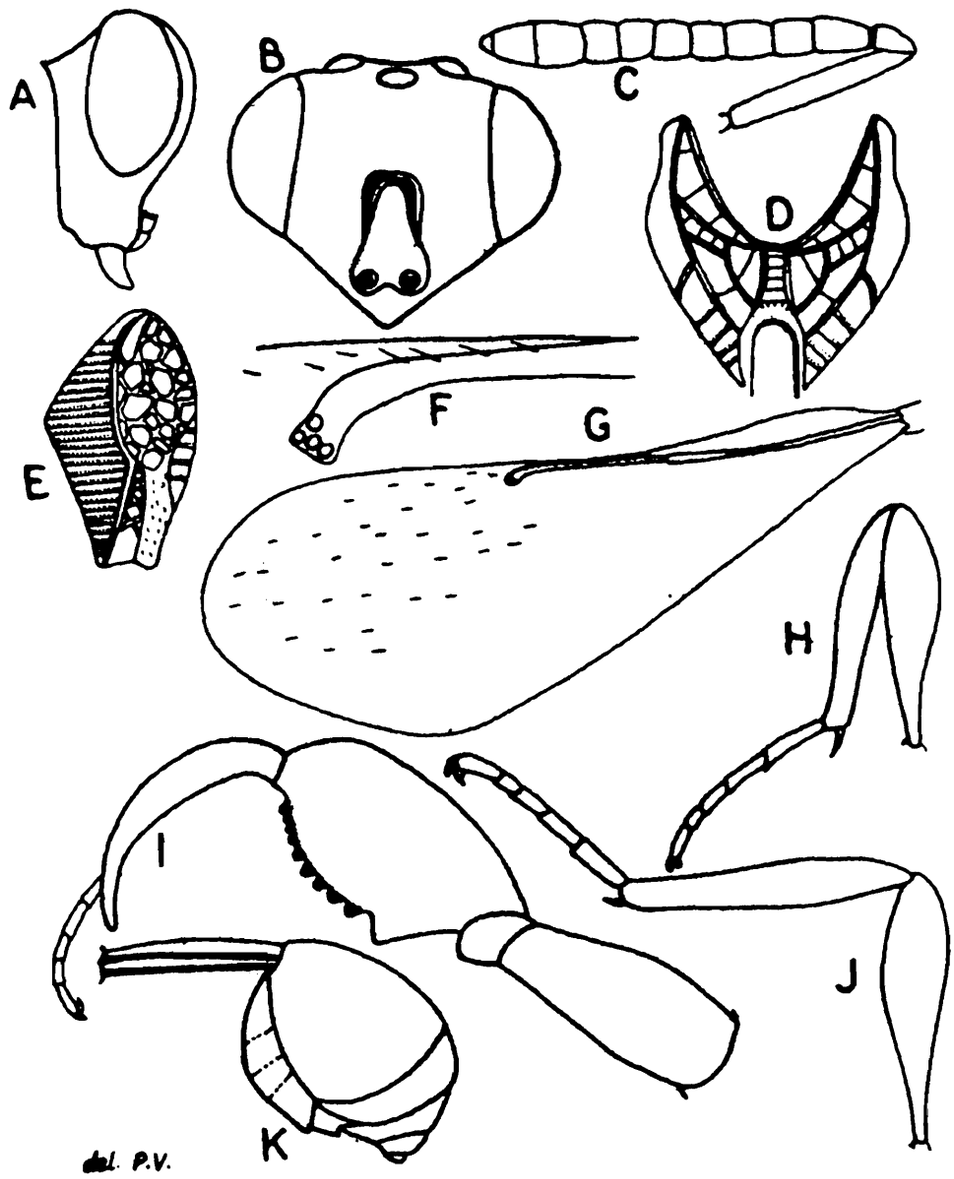

FIG. 91. *Epitranus ophiomontanus* (Mani & Dubey), female : A. Head in profile view; B. Head in front view; C. Antenna; D. Propodeum; E. Mesopleura; F. Stigmal area of fore wing; G. Fore wing; H. Fore leg; I. Hind leg; J. Middle leg; K. Abdomen.

times as long as thick, equal to the preceding 3 segments combined, first club segment 1.40 times last funicular segment, second slightly shorter than first, terminal segment conical, 0.33 of the preceding segment.

Pronotum almost 5 times as wide as long, with punctae distinctly larger, deeper, closer than on mesonotum; mesonotum with smaller,

shallow punctae, space between punctae equal to diameter of punctae; parapsidal furrows complete, well developed; scutellum more closely, deeply punctae, punctae almost contiguous, larger than on mesonotum; fore wing length : width 100 : 37; veins *sm m* ratio 161 : 100, *pm,* absent, *st* short; fore femur moderately stout apically; tibia slightly shorter than femur, slender; tarsus subequal to tibia; metatarsus longest, nearly 0.40 of tarsus; second segment about 0.60 of metatarsus; third 0.70 of the second; fourth nearly 0.70 of the third, fifth 0.60 of preceding; middle femur clavate; tibia slightly over the femur; tarsus 0.73 of tibia; metatarsus longest, about 0.27 of tarsus; second segment 0.80 of metatarsus; third 0.80 of the second; fourth 0.50 of the third; fifth 2.70 times preceding; hind leg clothed with fine silvery-white pubescence; coxa 2.40 times as long as thick, transversely striate above and with obscure shallow punctae at side, subequal to petiole; femur 1 17 times coxa, 2 times as long as thick, with one large and 9 smaller teeth, closely finely punctulate; tibia curved, slightly, shorter than femur; tarsus about 0.50 of tibia, metatarsus 0.20 of tarsus; second segment 1.30 times metatarsus; third 0.60 of the second; fourth slightly shorter than third; fifth slightly less than 2 times the fourth.

Petiole slender, longitudinally grooved, about as long as thick, 0.70 of abdomen, abdomen strongly compressed, viewed from side length width 100 : 80; tergite in apical 0.33, 0.50 with fine micropunctae, otherwise shiny.

Type-locality : Kathmandu, Nagarjuna Hill (Nepal)

Epitranus ambadevius (Mani & Dubey)

(Fig. 92 & 93)

1973 *Arretocera ambadevia,* Mani & Dubey, *Mem. School Ent.,* 2 : 13.

Male : Length 4.00 mm. Body black, eyes blackish-brown, ocelli black; antennae black, except for the reddish-brown scape and pedicel; fore and middle legs reddish-brown; hind coxa black, femur basal 0.75 black, rest reddish-brown; tegula, hind trochanter and basal portion of abdomen reddish-brown; femoral teeth black; wing hyaline, veins dark brown.

Head viewed from above length to width 35 : 100, head width to thorax 100 : 85; ocellocular space equal to ocellar diameter, interocellar space 2.00-2.25 times ocellocular space, front ocellar space subequal to ocellocular space; viewed from front width to length 100 : 74; frons with large, shallow punctae at side, becoming shallower towards vertex; scrobe moderately deep transversely obscurely striolate, similar to vertex; viewed from side height to width 100 : 52, gena nearly 0.60 of eye; postorbital space more densely punctate, posterior margin strongly carinate; antennae slender, segments 13 : 1.1.1 7.3; scape 0.30 of antenna, annellus minute,

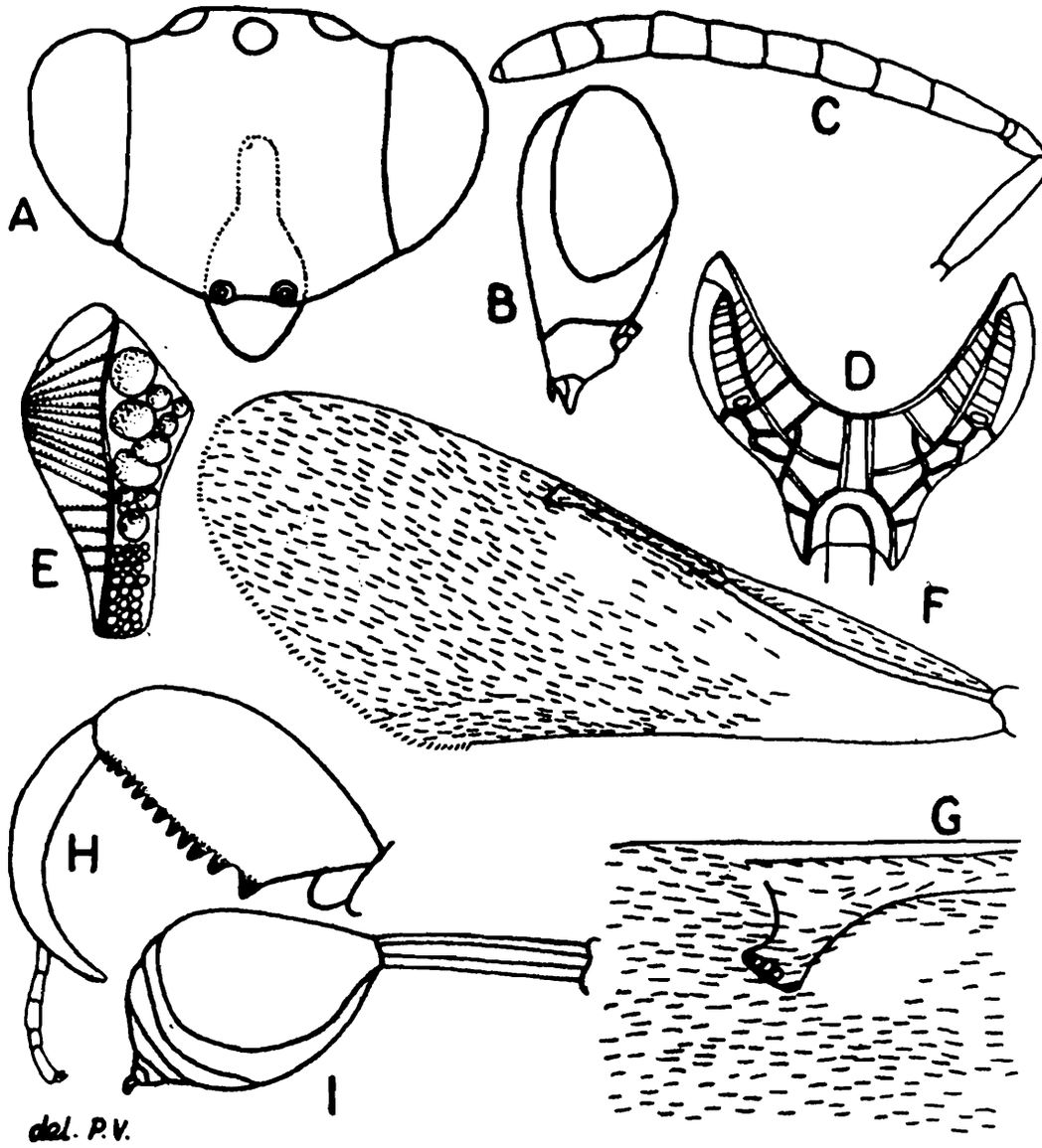

FIG. 92. *Epitranus ambadevius* (Mani & Dubey), female : A. Head in front view; B. Head in profile view; C. Antenna, D. Pronotum; E. Mesopleura; F. Fore wing; G. Stigmal area of fore wing; H. Hind leg; I. Abdomen.

about 3-4 times as wide as long; first funicular segment longest; second segment nearly 0.70 of the first; third slightly to the second; fourth slightly shorter than the third; fifth equal shorter than third; sixth and seventh subequal; club 2.50 times as long as thick, slightly more than last 2 funicular segment, second 1.60 times the first, last segment conical, short nearly 0.33 of the preceding.

Pronotum transverse, almost 4 times as wide as long, with punctae distinctly larger, deeper and closer than on mesonotum which latter is with smaller and shallower punctae, separated by 1.50 times their diameter; parapsidal furrows complete; scutellum with contiguous punctae, larger than mesonotum; fore wing length width 100 : 33; veins *sm* : *m* ratio 175 : 100, *pm* absent, *st* short; hind legs

clothed with fine silvery-white pubescence, more dense on coxa; coxa a little less than 2 times as long as wide and 0.80 times as long as abdominal petiole; femur 1.30 times coxa, 1.80 times as long as wide, with one large tooth followed by 11 large fine teeth behind, partly finely punctulate; tibia curved, as long as femur; tarsus slightly less than 0.50 of tibia; metatarsus 0.20 of tarsus; second segment slightly longer than metatarsus; the third subequal to second; fourth 0.50 of the third, fifth equal to the 2 preceding segments combined.

Abdomen with longitudinally grooved slender petiole, almost 0.80 of abdomen, about 7 times as long as thick; viewed from above compressed; viewed from side length : width 100 : 71; first tergite covering 0.80 of abdomen.

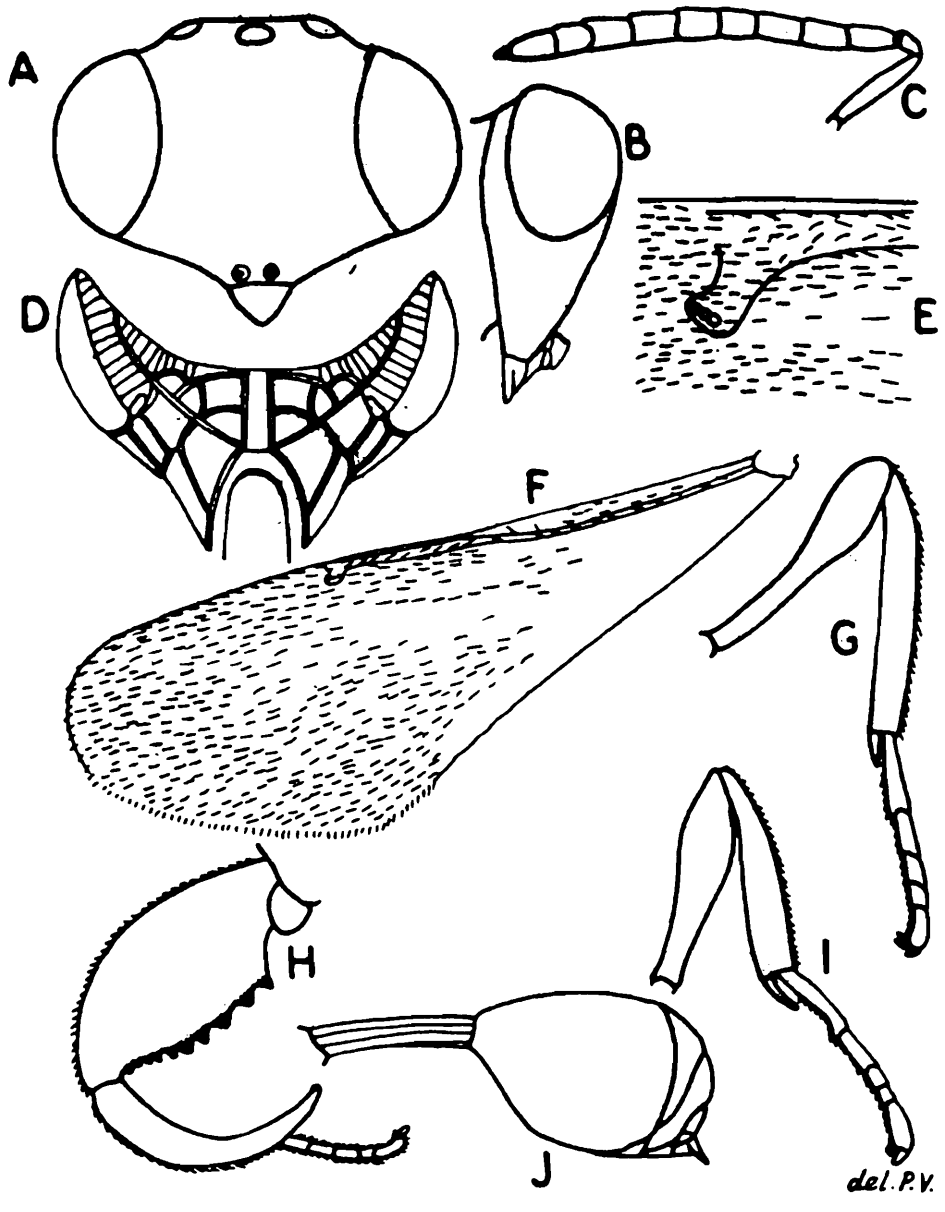

FIG. 93. *Epitranus ambadevius* (Mani & Dubey), male : A. Head in front view; B. Head in profile view; C. Antenna; D. Propodeum; E. Stigmal area of fore wing; F. Fore wing; G. Middle leg; H. Hind leg; I. Fore leg; J. Abdomen.

Female : Length 4.00 mm. Body black; inner carina of the hind tibia and femoral teeth black; rest as in male.

Head viewed from front length : width 60 : 100; scrobe with transverse striolations like male; viewed from side height : width 100 : 49, gena subequal to eye; antennae slender, segments 13 : 1.1.1.7.3; scape 0.20 of antenna, rest as in male; fore wing length to width 100 : 35; veins *sm : m* ratio 170 : 100, *pm* absent, *st* short; fore femur moderately stout; tibia slender; subequal to femur; tarsus subequal to tibia, metatarsus about 0.40 of tarsus; second segment 0.70 of metatarsus; third 0.50 of the second and 0.60 of the fourth; fourth equal to the preceding 3 segments combined; middle femur clavate; tibia slightly longer than femur; tarsus 0.80 of tibia; metatarsus 0.34 of tarsus; second segment 0.60 of metatarsus; third segment 0.60 of the second; fourth segment 0.80 of the third; fifth equal to preceding 2 segments combined; hind leg as in male, except that femoral teeth are 12.

Petiole longitudinally grooved, slender, about 0.70 of abdomen, and as long as thick, compressed; viewed from side abdomen length : width 100 : 67, the first tergite covering 0.84 of abdomen.

Type locality : Borivili (Bombay)

Epitranus pallava (Mani & Dubey)

(Fig. 94)

1973 *Arretocera pallava,* Mani & Dubey, *Mem. School Ent.*, 2 : 19.

Male : Length 4.00 mm. Body black; eyes, ocelli dark chocolate coloured; antennae, fore and mid legs, hind femur, except for a central obscure oval blackening both inside and outside, dark ferruginous-brown; hind coxa concolorous with thorax; tegula, petiole and abdomen brownish-black; femoral teeth and tibial carinae black; wings hyaline, vein brownish-black.

Head viewed from above width to length 35 : 100; width to thorax width 100 : 87; ocellocular space equal to ocellar diameter, interocellar space 2 times ocellar diameter, front ocelar space equal to ocellocular space; occiput margined, strongly sinuate in the middle; vertex finely, closely, umbilicately punctate, punctae close to each other than their own diameter; viewed from front width to length 100 : 75, frons with sculpture similar to vertex but more obscure in the middle, not excavated; scrobe shallow, obscurely marked with fine transverse striolations; viewed from side height to width 100 : 64; gena about 0.50 of eye, postorbital and malar spaces rugosely reticulately punctate, posterior margin strongly carinate; antennae slender, 2.25 times head length, segments 13 : 1 1 1 7.3; scape 0.33 of antenna, nearly 6 times as long as thick; pedicel nearly 0.50 of the first funicular segment; annellus nearly 4 times as wide as long;

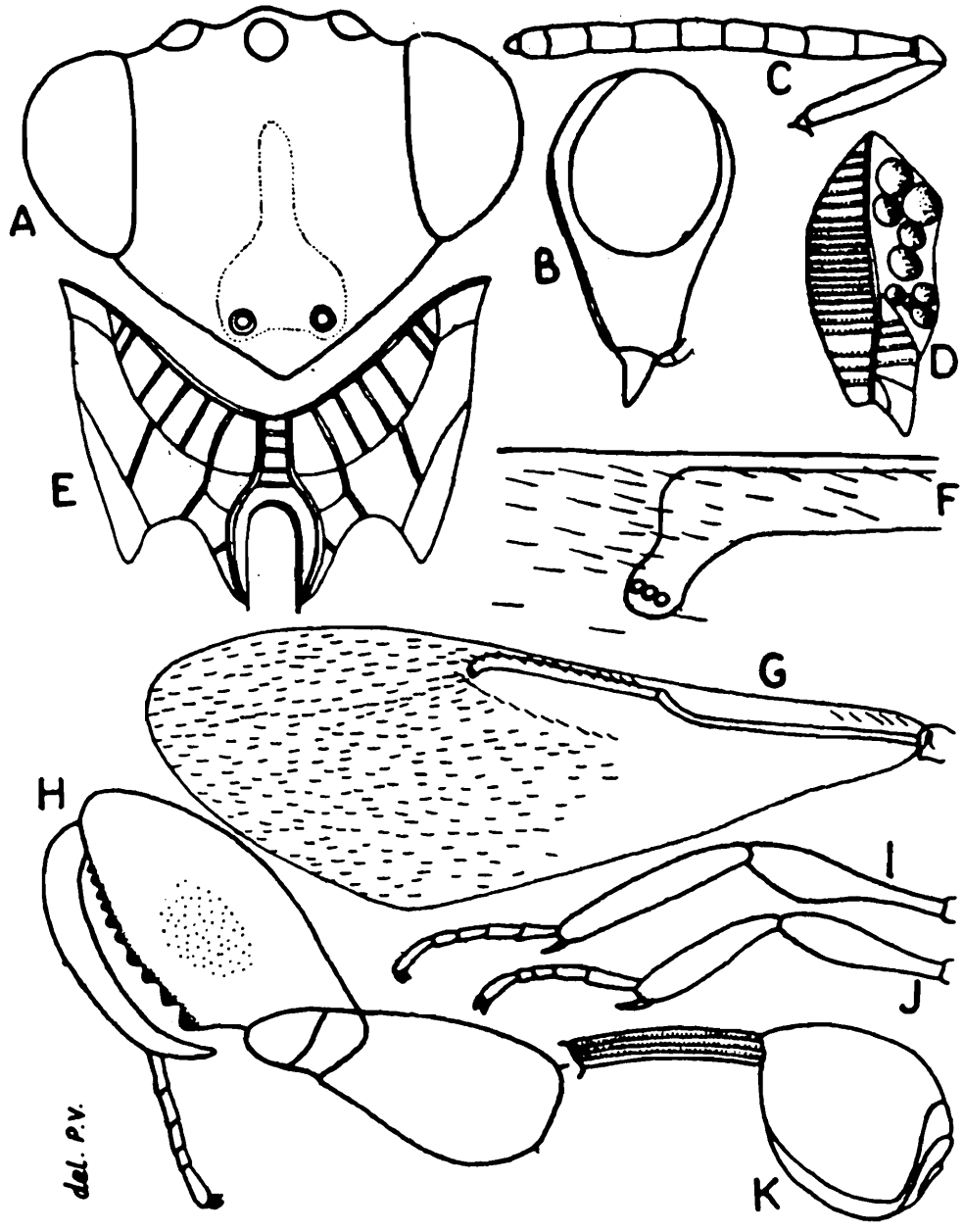

FIG. 94. *Epitranus pallava* Mani & Dubey, male : A. Head in front view; B. Head in profile view; C. Antenna; D. Mesopleura; E. Propodeum; F. Stigmal area of fore wing; G. Fore wing; H. Hind leg; I. Middle leg; J. Fore leg; K. Abdomen.

first funicular segment longest, second segment 1.25 times the third; third slightly shorter than the fourth; fourth and fifth subequal; sixth segment slightly longer than the fifth and subequal to second segment; seventh 0.80 of the sixth and subequal to the third; club 2.40 times as long as thick, slightly longer than 2 times the last funicular segment, the first club segment 1.80 times the second segment, second 1.70 times the terminal segment, terminal segment conical.

Pronotum almost 3.50 times as wide as long, punctae distinctly larger and deeper than on mesonotum; mesonotum with smaller and shallow punctae, nearly 1.50 times their own diameter; parapsidal furrows complete, well developed; scutellum with deep contiguous punctae larger than on mesonotum; fore wing length to width 100 : 37; veins *sm : m* ratio 139 : 100; *pm* absent, *st* short; fore femur moderately stout subapically; tibia subequal to femur; metatarsus 0.30 of tarsus, second 0.70 of the first; third slightly longer than 0.50 of the second; fourth slightly shorter than the third; fifth 3 times the fourth; middle leg distinctly longer than fore leg; femur clavate apically; tibia slightly longer than femur; tarsus nearly 0.80 of tibia; metatarsus 0.20 of tarsus, second slightly shorter than metatarsus, second and third subequal, fourth slightly shorter than third segment, fifth 2 times the fourth; hind leg clothed with silvery-white pubescence, more dense on the coxa; coxa a little less than 2 times as long as wide, 0.90 of abdominal petiole; femur 2 times as long as wide, nearly 1.30 times coxa; with one large tooth at base followed by 9 fine teeth behind; tibia curved, slightly shorter than femur; tarsus nearly 0.50 of tibia; metatarsus 1.30 times the second segment; second segment 1.20 times the third; third 1.25 times the fourth; fourth 0.50 of metatarsus; fifth slightly longer than 2 times the fourth.

Petiole longitudinally grooved, finely striate flattened laterally, about 0.87 of abdomen, 8 times as long as thick; abdomen strongly compressed, viewed from side length : width 65 : 100.

Type locality : Madras-Mahabalipuram

Epitranus ceylonensis (Mani)

1936 *Arretoceroides ceylonensis,* Mani, *Rec. Indian Mus.,* 38 : 128.
1938 *Pararretoceroides ceyloensis,* Mani, *Cat. Indian Ins.,* 23 : 149.

Male : Length 4.00 mm. Body black; head black; antennae dark reddish-brown; club with a dark reddish-brown transverse band near basal 0.25 indicating an absent suture; funicular segments except the first also with a similar transverse band; thorax black; hind coxa black; other coxae reddish-brown; rest of legs reddish-brown except hind femora which are somewhat darker; abdomen reddish-brown.

Head slightly wider than thorax, without distinct sculpture, densely and finely pubescent; scape slender about 0.50 of its length; pedicel short, annellus single, wider than long, but not as wide as funicular segments; first funicular segment very short, much thicker than long; segments 2-8 subequal; second and third segments longer than thick, others subquadrate; club a little longer than scape; thorax umbilicately punctate; punctation on mesopleura somewhat larger than on dorsum of thorax; hind coxae indistinctly punctate, very densely setose beneath; hind femora densely punctate, finely

pubescent; with one large basal tooth followed by 10 blunt, smaller black teeth, of which the last 3 are minute; abdomen finely and sparsely punctulate; petiole about 0.75 of hind coxae, moderately thick and longitudinally corrugated.

Type locality : Ceylon : Peradeniya

Epitranus austini (Fernando)

1959 *Pararretoceroides austini,* Fernando, *Ceylon J. Sci.,* (Biol. Sci.) 2(2) : 241, fig. 1,2.

Male : Length 3.30 mm. Body black.

Head broader than long and somewhat broader than thorax, piceous, smooth, without any sculpture; antennae longer than thorax, ochraceous; scape slender, less than 0.33 length of antenna; pedicel short as long as broad; one small annellus broader than long and narrower than funicle; first segment of funicle, much longer than broad; second to eight segments subequal being longer than broad; club shorter but broader than scape; fairly thick lines present on funicular segment.

Thorax pronotum, mesonotum and scutellum black and faintly tuberculate; upper part of hind coxae piceous, lower region stramineous, smooth; other coxae castaneous; rest of legs strmineous except the hind femur which is castaneous; hind femur provided with a row of 8 black teeth, with the basal tooth broader and longer than the rest which are blunt; last 3 larger than the rest which are blunt; last 3 teeth smaller and gradually diminishing in size; basal outer margin of hind tibia provided with 2 distinct flavous spines; wings hyaline hairy.

Abdomen oval, fuscous on the sides, dorsally smooth at apex setose; petiole slightly longer than hind coxae, fairly thick and longitudinally striated.

Type locality : Talawakele (Ceylon)

Epitranus austini is closely allied to *E. ceylonensis* (Mani) but can be distinguished as follows : (a) general colouration of the body and limbs; (b) the nature of the antennal segments; (c) the structure and colouration of the hind femora, which have 8 teeth.

Epitranus ramnathi (Mani & Dubey)

(Fig. 95)

1973 *Arretocera ramnathi,* Mani & Dubey. *Mem. School Ent.,* 2 : 21.

Female : Length 3.50 mm. Body ferruginous-brown; eyes and ocelli brownish-black; antenna brown; fore and middle legs ferruginous-brown; hind leg ferruginous-red except for black tibial inner carina and teeth; pronotum pale reddish; petiole ferruginous-red; abdomen brownish-black; wings hyaline, veins dark brown.

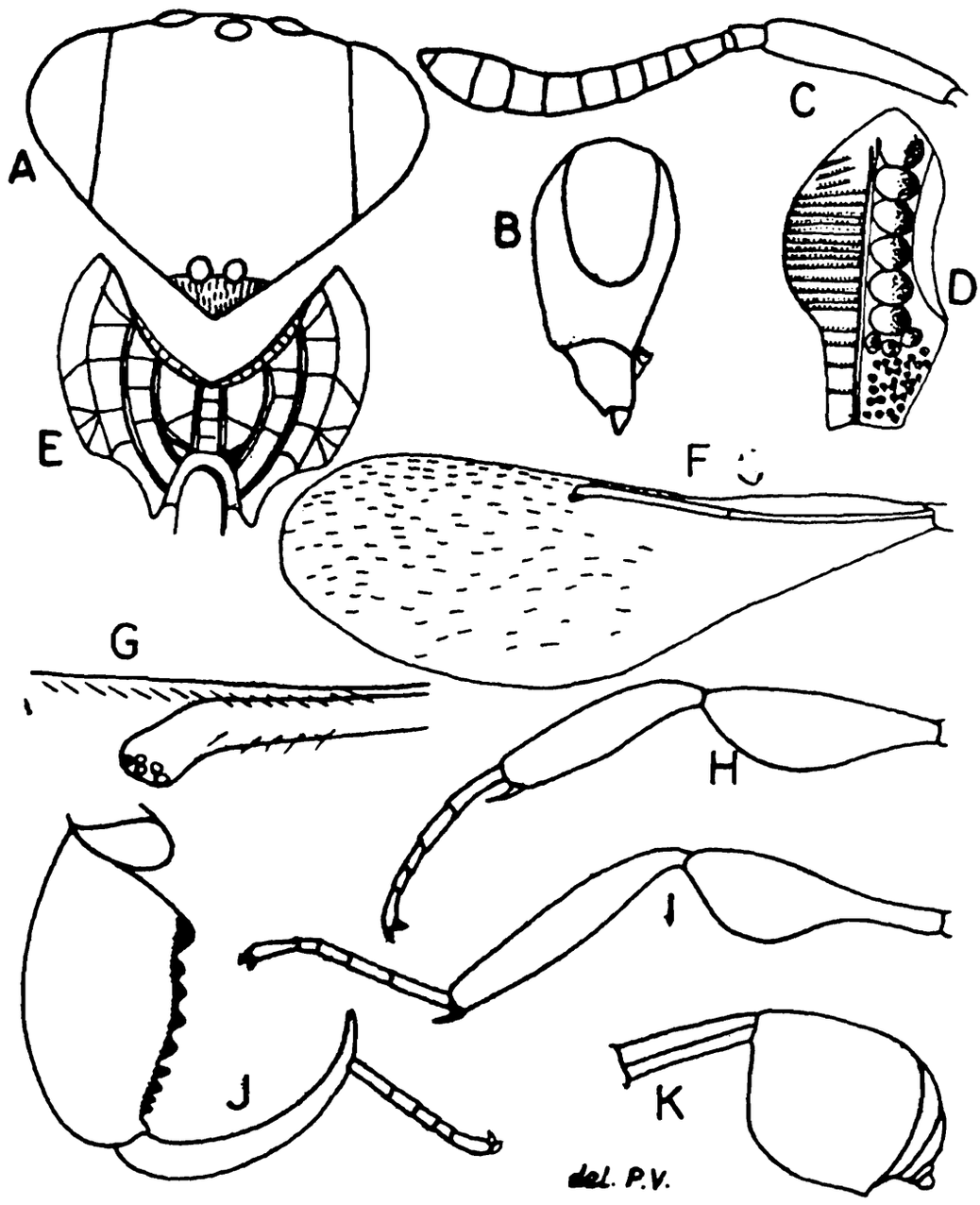

FIG. 95. *Epitranus ramnathi* (Mani & Dubey), female : A. Head in front view; B. Head in profile view; C. Antenna; D. Mesopleura; E. Propodeum; F. Fore wing; G. Stigmal area of fore wing; H. Fore leg; I. Middle leg; J. Hind leg; K. Abdomen.

Head viewed from above, length : width 37 : 100, head width to thorax width 100 : 86; ocellocular space 1.25 times ocellar diameter; interocellar space 2 times ocellocular spaces; front ocellar space about equal to ocellar diameter; vertex with small obscure and shallow punctae, otherwise with fine reticulate microsculpture; viewed from front width to length 100 : 80, frons with shallow punctae, more widely spaced than on the vertex; scrobe with very minute transverse striolations; viewed from side height to width

100 : 57, gena slightly less than 0.50 of eyes, postorbital space more closely and deeply punctate than rest of the head, margin carinate; antenna slender, 0.57 of head length, segments 13 : 1.1 1 7.3; scape 0.57 of antenna, nearly 6 times as long as thick; pedicel nearly 0.90 of the first funicular segment; annellus nealry 3 times as wide as long; second segment about 0.70 of the first; third subequal to second; segments 4-7 subequal; club equal to the preceding 3 segments combined and about 2 times as long as thick, first club segment slightly longer than last funicular segment, second slighlty longer than the preceding; terminal segment conical, 0.25 of the preceding.

Pronotum transverse, about 6 times as wide as long, punctae distinctly larger, deeper, closer than on mesonotum; mesonotum slightly wider than pronotum, with smaller and shallower punctae separated by their own diameter, parapsidal furrows complete, well developed; scutellum with almost contiguous punctae, larger than on mesonotum; fore wing length : width 100 : 34; veins *sm : m* ratio 133 : 100; fore femur fusiform, tibia 0.90 of femur, slender; tarsus about 0.90 of tibia; metatarsus longest, 0.33 of tarsus; second segment 0.80 of metatarsus; third segment nearly 0.60 of the second; fourth segment slightly shorter than the third; fifth segment 2 times preceding; middle femur clavate; tibia slightly over femur; tarsus about 0.80 of tibia; metatarsus longest, nearly 0.33 of tarsus; second segment 0.70 of metatarsus; third 0.70 of the second; fourth 0.60 of the third; fifth 2.50 times preceding; hind legs with fine white pubescence; coxa 2.30 times as long as thick, 1.20 times petiole; femur slightly over coxa; 2 times as long as wide, with one large and 8 small teeth; tibia curved, slightly shorter than the femur; tarsus 0.56 of tibia; metatarsus longest, nearly 0.33 of tarsus; second segment 0.60 of metatarsus; third 0.50 of metatarsus; fourth 0.80 of the third; fifth 2 times the fourth.

Petiole longitudinally grooved, about 5 times as long as thick, about 0.70 of abdomen; abdomen strongly compressed, viewed from side length : width 100 : 80; first tergite with microsculpture in the apical 0.25.

Type locality : Dehra Dun

Epitranus tanjorensis (Mani & Dubey)

(Fig. 96 & 97)

1973 *Arretocera tanjorensis,* Mani & Dubey, *Mem. School Ent.,* 2 : 25.

Female : Length 4.00 mm. Body black; eyes, ocelli dark ferruginous-brown; antenna ferruginous-brown, fore and middle legs reddish-brown, hind coxa and 0.75 of femur black; rest of femur reddish-brown; tibia and tarsus brown; femoral teeth black; petiole and first tergite of abdomen black, rest reddish-brown; wings hyaline, veins dark brown.

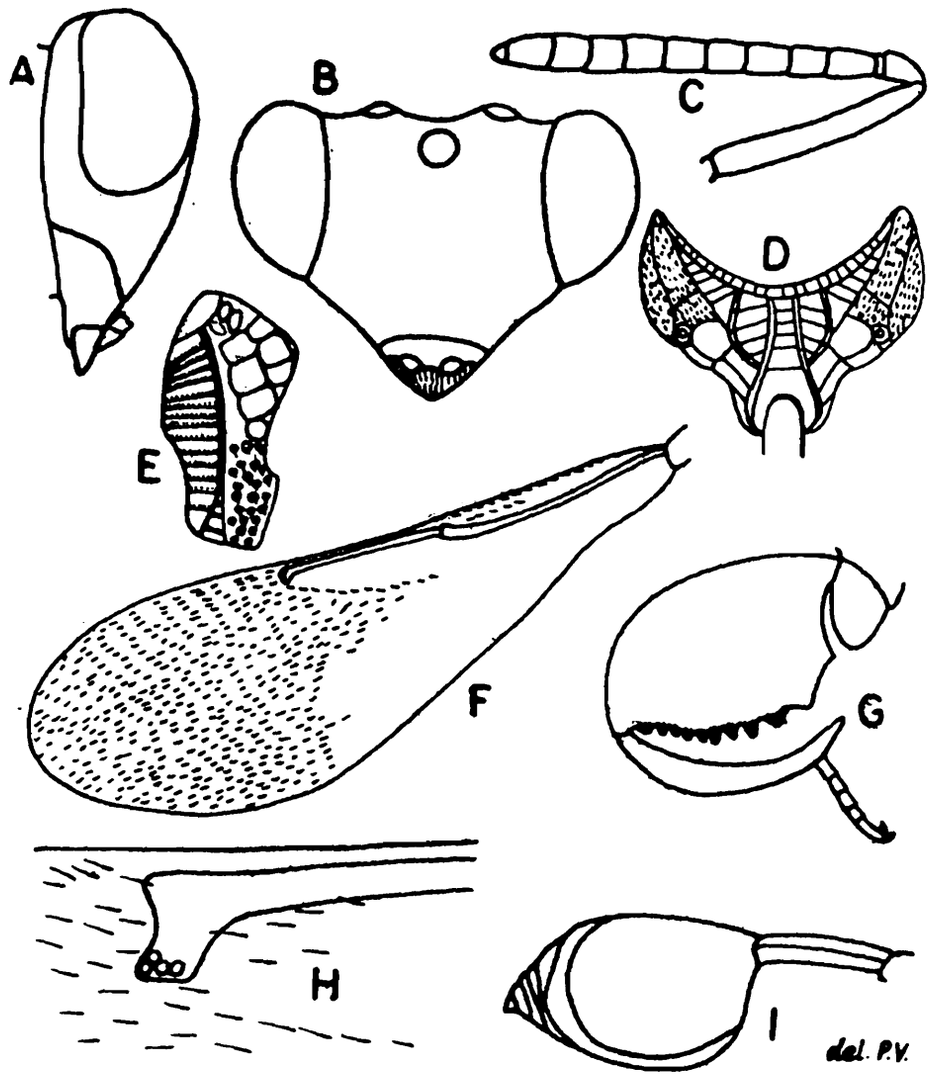

FIG. 96. *Epitranus tanjorensis* (Mani & Dubey), female : A. Head in profile view; B. Head in front view; C. Antenna; D. Propodeum; E. Mesopleura; F. Fore wing; G. Hind leg; H. Stigmal area of fore wing; I. Abdomen.

Head viewed from above, length : width 40 : 100, head width to thorax width 100 : 87, ocellocular space equal to ocellar diameter; interocellar space about 2 times ocellocular spaces, front ocellar space subequal to ocellar diameter; vertex with minute obscure and shallow punctae, otherwise with fine reticulate microsculpture; viewed from front width to length 100 : 80; frons with larger punctae than vertex; scrobe impressed, with transverse striolations; viewed from side height to width 100 : 48; about 0.50 of eye; postorbital space more closely punctate, margin carinate; antennae slender, segments 13 : 1.1.1.7.3; scape 0.50 of antenna nearly 7 times as long as thick; pedicel about 0.90 of the first funicular segment; annellus about 2.50 times as thick as long; first funicular segment longest; second 0.80

of the first, third and fourth subequal; 5-7 subequal; club slightly shorter than the 3 preceding funicular segments combined, as long as thick; first club segment equal to the funicular segment; second segment 1.25 times the first; terminal segment conical, 0.30 of the preceding.

Pronotum transverse, about 3.50 times as wide as long, 0.30 of thorax, with distinctly larger, deeper, closer punctae than mesonotum; parapsidal furrows complete, mesonotum with punctae smaller, shallow, separated by their own diameter; scutellum more closely, deeply punctate; punctae almost contiguous, larger than on mesonotum; fore wing length to width 100 : 35; veins *sm : m* ratio 147 : 100; *pm* absent, *st* short; hind leg clothed with fine silvery-white pubescence; coxa nearly 2 times as long as thick, transversely striate above, with obscure shallow punctae at side, about 1.20 times abdominal petiole; femur 1.40 times coxa, 1.75 times as long as thick, with one large and 9 small teeth, closely finely punctulate; tibia curved, 0.80 of femur; tarsus slightly less than 0.50 of tibia; metatarsus 0.25 of tarsus; second segment 0.80 of metatarsus; third subequal to second; fourth 0.70 of the third; fifth equal to 4 times the preceding.

Petiole slender longitudinally nearly 5.40 times as long as wide, about 0.50 of abdomen; abdomen viewed from above compressed, viewed from side length : width 100 : 58; first tergite with scattered hairs on apical 0.25.

Male : Length 3.50 mm. Body black; eyes and ocelli dark brown, antenna dark brown; fore and middle legs dark brown; middle coxa and basal 0.75 of femur black; rest femur brown; tibia, tarsus dark brown; femoral teeth black; petiole and abdomen black, except pale brown aedeagus; wings hyaline, veins pale brown.

Head viewed from above, length to width 36 : 100; head width to thorax width 100 : 78; ocellocular space subequal to ocellar diameter; interocellar space equal to about 2 times ocellar spaces, front ocellar space subequal to ocellar diameter; vertex with small, obscure, shallow punctae, otherwise with fine reticulate microsculpture; head viewed from front width to length 100 : 69; interorbital space to width of head 60 : 100; frons with larger punctae than vertex; scrobe impressed with transverse striolations, bordered by carina; head viewed from side height to width 100 : 56; gena nearly 0.43 of eye; postorbital space more closely punctate, margin carinate; antennae slender, segments 13 : 1.1.1.7.3; scape nearly 0.26 of antenna and nearly 7 times as long as thick; pedicel nearly 0.50 of the first funicular segment; annellus minute, about 4.30 times as thick as long; first funicular segment 2 times pedicel; second segment 1.20 times the first; third subequal to second; fourth 0.90 of the third; fifth and sixth subequal; seventh subequal to first, club equal to the preceding 2 segments combined, first club segment 0.90 of last

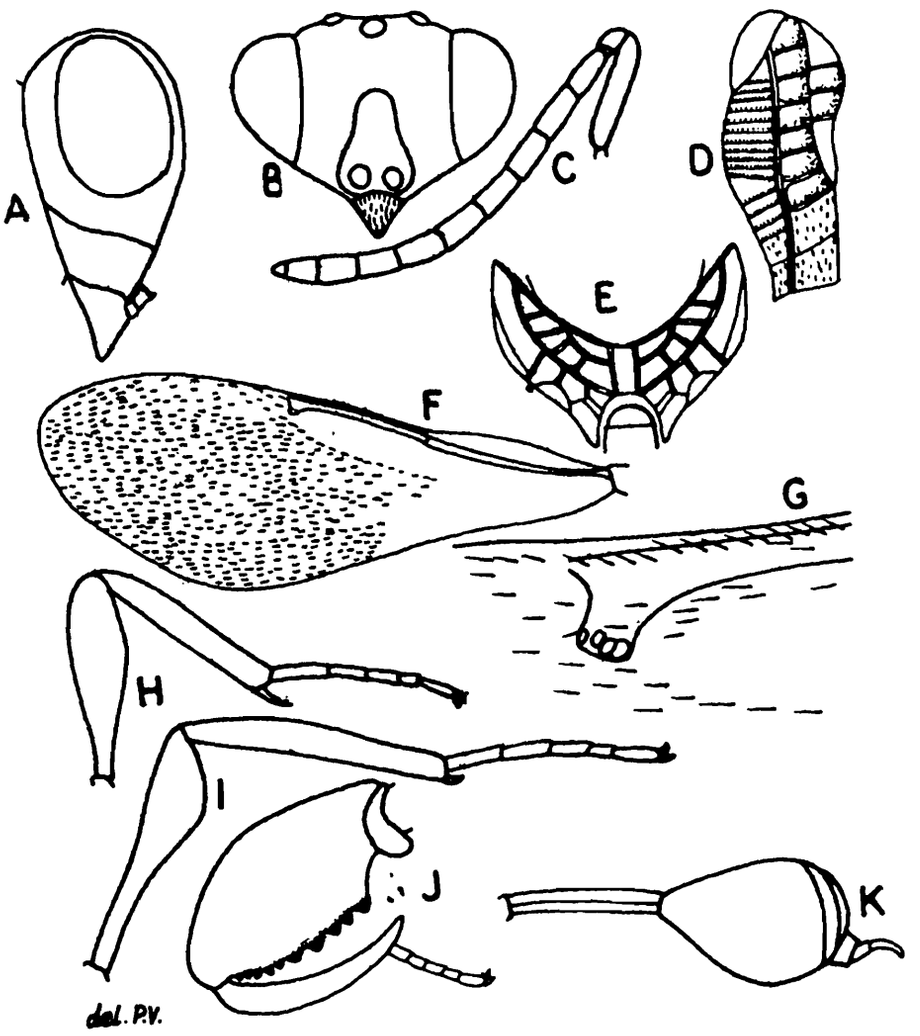

FIG. 97. *Epitranus tanjorensis* (Mani & Dubey), male : A. Head in profile view; B. Head in front view; C. Antenna; D. Mesopleura; E. Propodeum; F. Fore wing; G. Stigmal area of fore wing; H. Fore leg; I. Middle leg; J. Hind leg; K. Abdomen.

funicular segment, second nearly 0.70 of the first club segment, terminal segment conical, 0.66 of the preceding.

Pronotum transverse, about 4 times as wide as long, 0.25 of thorax, with distinctly larger, deeper, closer punctae than mesonotum; parapsidal furrows complete, mesonotum with punctae smaller, shallow; scutellum more closely, deeply punctate, punctae contiguous; fore wing length to width 100 : 34; veins *sm : m* ratio 75 : 100; *pm* absent, *st* short; fore femur clavate, tibia slender, nearly equal to femur; tarsus slightly shorter than tibia; metatarsus 0.33

of tarsus; second segment 0.60 of metatarsus; third segment slightly shorter than preceding; fourth 0.50 of the second, fifth 2.50 times the fourth; middle femur fusiform; tibia slender, slightly longer than femur; tarsus 0.80 of tibia; metatarsus longest, 0.26 of tarsus; second segment nearly 0.80 of metatarsus; third 0.80 of the second; fourth 0.70 of the third; fifth equal to second segment; hind legs clothed with fine, silvery-white pubescence; coxa about 2 times as long as thick; 0.80 of abdominal petiole; femur 1.20 times coxa, 2 times as long as thick, with one large and 9 smaller teeth; tibia curved, 0.86 of femur; tarsus 0.46 of tibia; metatarsus about 0.20 of tarsus; second, third and fourth subequal; fifth equal to metatarsus.

Petiole slender, longitudinally grooved, nearly 9 times as long as thick, and 0.83 of abdomen; abdomen viewed from side length to width 100 : 67, first tergite with a few white hairs on apical margin.

Type locality : Tanjore : Vannar Bank

Epitranus nilamburensis (Mani & Dubey)

(Fig. 98)

1973 *Arretocera nilamburense,* Mani & Dubey, *Mem. School Ent.,* 2 : 16.

Female : Length 5.00 mm. Body black; eyes and ocelli dark brown; antenna brownish-black, except for ferruginous-brown scape; pedicel, annellus and base of first funicular segment; gena and malar space dark brown; fore and middle legs dark brown; hind coxa concolorous with thorax; hind femur black, except for dark ferruginous-brown near tip above; hind tibia and tarsi dark ferruginous-brown; tegulae, petiole and abdomen brownish-black; femoral teeth black; wings hyaline, vein dark brown.

Head viewed from above width to length 34 : 100; nearly as wide as thorax; ocellocular space nearly equal to ocellar diameter; interocellar space 2 times the ocellocular space; front ocellar space nearly equal to the ocellocular space; viewed from front width to length 100 : 67; except for the finely, transversely striolate scrobe, face with well separated shallow punctae, space between punctae equal to their diameter; punctae become fine and obscure towards vertex; scrobe not depressed, obscurely indicated by fine carinae; viewed from side height to width 100 : 59, gena slightly less than 0.50 of the eye, rugose; postorbital space reticulately rugose, with hind margin carinate; vertex with fine scattered punctae; antennae slender, segments 13 : 1.1.1.7.3; scape about 0.50 of antenna, nearly 7 times as long as thick; pedicel about 0.70 of the first funicular segment; annellus nearly as wide as long; first funicular segment longest; second nearly 0.60 of the first; third subequal to second; segments 4-7 subequal, each slightly longer than the third; club 2.40 times as long as thick, 2.75 times last funicular segment, first club segment 0.75 of the last funicular segment, second 1.50 times the

first club segment, terminal segment conical and subequal to first club segment.

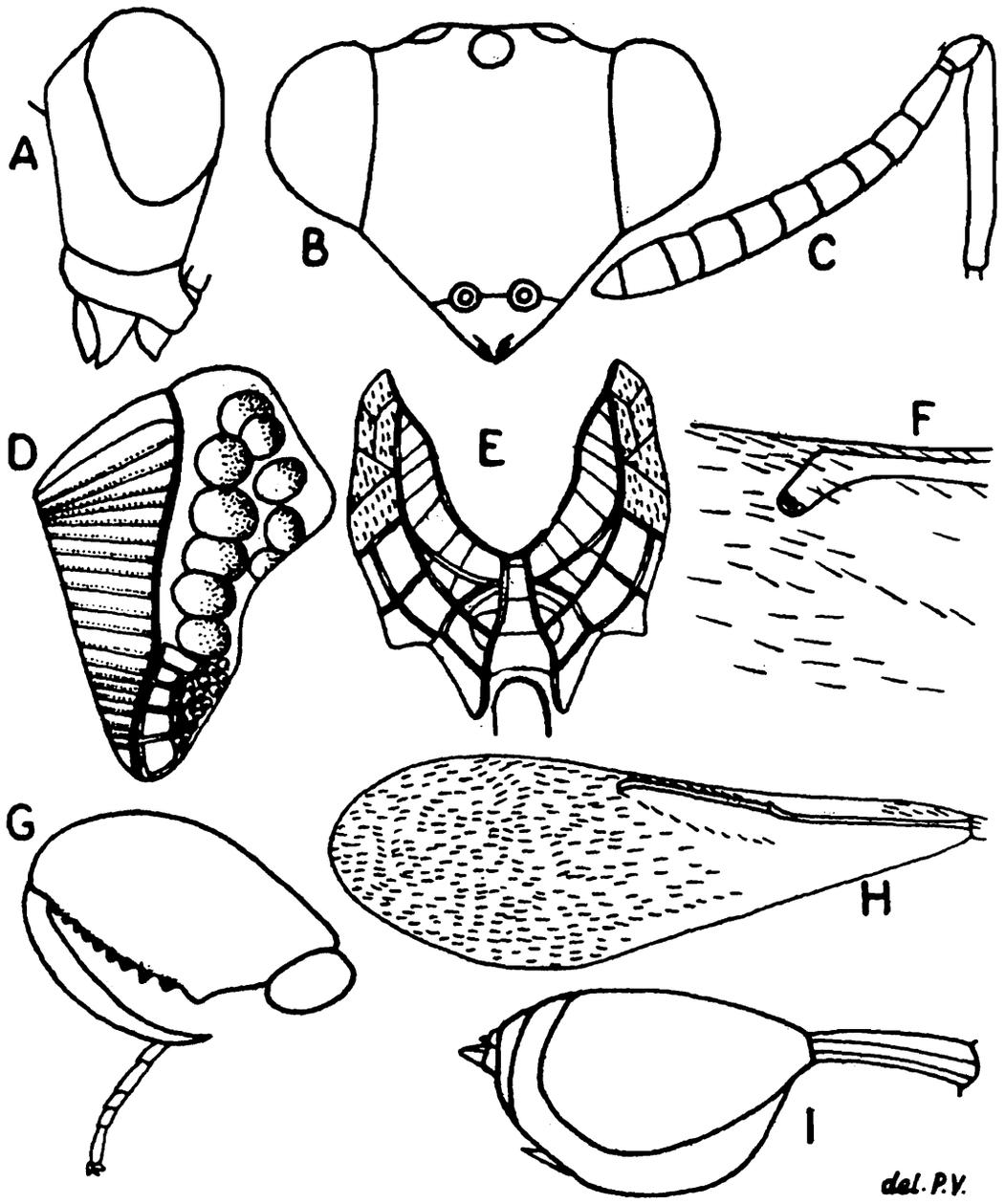

FIG. 98. *Epitranus nilamburensis* (Mani & Dubey), female : A. Head in profile view; B. Head in front view; C. Antenna; D. Mesopleura; E. Propodeum; F. Stigmal area of fore wing; G. Hind leg; H. Fore wing; I. Abdomen.

Pronotum almost 5 times as wide as long, with punctae distinctly larger, deeper and closer than on mesonotum; mesonotal punctae smaller and separated by their own diameter; parapsidal furrows complete, well developed; scutellum with deeper, contiguous punctae, 2 times larger than on mesonotum; fore wing width to length 33 : 100; veins *sm : m* ratio 127 : 100, *pm* absent, *st* short; fore femur moderately stout subapically; tibia slender, slightly shorter than femur; metatarsus 0.33 of tarsus; second segment 0.70 of

metatarsus, third segment nearly 0.60 of the second; fourth 0.50 of the third; fifth 4 times preceding; middle leg distinctly longer than fore leg; femur stout apically; tibia slender, slightly longer than femur; metatarsus 0.33 of tarsus; second segment 0.70 of metatarsus, third segment subequal to the second; fourth slightly shorter than 0.50 of the third; fifth nearly 2 times the fouth; hind leg densely clothed with silvery-white pubescence, more dense on coxa; coxa a little less than 2 times as long as wide; slightly longer than abdominal petiole; femur with fine microscopic punctae; 2 times as long as wide, nearly a little over 1.50 times coxa, with large tooth at base followed by 9 teeth behind; tibia curved; slightly longer than femur; metatarsus nearly 0.70 of the second segment; second 1.30 times the third; third slightly longer than the fourth; fourth subequal to first; fifth 2 times the fourth.

Petiole stout, longitudinally grooved, almost 0.50 of abdomen, nearly 4 times as long as thick; abdomen viewed from above strongly compressed, viewed from side length to width 100 : 60, first tergite 0.83 of the abdomen.

Type locality : Mulathammanna (Nilambur)

Species Incertae Sedis

Epitranus lacteipennis Cameron

1883 *Epitranus lacteipennis,* Cameron, *Trans. ent. Soc. London,* 29 (2) : 187-188.

Length 4.50 mm. "Dark reddish testaceous; head behind, more or less of the lobes of the mesonotum, pleura, sternum, metanotum, petiole for the most part, abdomen more or less at the sides and above, coxae and femora in the middle, blackish. Antennae not much longer than thorax, becoming very gradually thickened towards the apex, which is sharply conical; the segments of the flagellum blackish at the apex; head obsoletely punctured, covered with scattered silvery-white short hairs; hind ocelli situated on the edge of the head behind; thorax coarsely punctured; in the centre of the mesopleura is a shining semi-oblique line; in front of this line the pleura is obliquely striated; scutellum is margined behind, border shortly projecting; metanotum reticulated, finely punctured; petiole carinated at the side, longitudinally striated; second abdominal segment is longer than the petiole; its basal 0.50 is smooth and shining, apical finely punctured; posterior coxae are not much shorter than the femora, which are somewhat alutaceous, and with the coxae, are covered with short pale hairs; femora have 9 short basal teeth, these at the apex being the shortest; wings a very little longer than the abdomen, lacteous; nervurus pallid; cubitus almost obsolete.

Hab. Oahu (No. 87)"

SUBFAMILY CHALCIDINAE

1904 *Smicrini,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 250.
1909 *Smicrini,* Schmiedeknecht, *Gen. Ins.,* 97 : 29.
1938 *Chalcidini,* Mani, *Cat. Indian Ins.,* 23 : 58.
1960 *Chalcidinae,* Habu, *Bull. Nat. Inst. agric. Sci. Japan,* (C) 11 : 333.

Head without horn; antennae inserted in the middle of face on or about the level of the lower orbital border, never near the mouth; hind tibiae arcuate, spiny at tip, with a minute spur near tip; abdomen distinctly petiolate, never sessile or subsessile, petiole with a lamina in front and behind.

KEY TO GENERA

1. Middle tibiae without a distinct spur; hypopygium in female produced behind; terminal abdominal sternites in male emarginate at tip; claws bifid in male. *Chalcis* Fabricius

Middle tibiae with a distinct spur; hypopygium in female not well developed; terminal abdominal sternites in male not or only obscurely emarginate at tip; claws simple in both the sexes. *Spilochalcis* Thomson

Chalcis Fabricius

1787 *Chalcis,* Fabricius, *Mant. Ins.,* 1 : 272.
1811 *Smicra,* Spinola, *Ann. Mus. Hist. Nat.,* 17 : 147.
1883 *Smicra,* Kirby, *J. Linn. Soc. London,* 17 : 54.
1904 *Smicra,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 250, 253.
1909 *Smicra,* Schmiedeknecht, *Gen. Ins.,* 97 : 34.
1923 *Chalcis,* Gahan & Fagan, *Ball. US nat. Mus.,* 124 : 31.
1938 *Chalcis,* Mani, *Cat. Indian Ins.,* 23 : 58.
1951 *Chalcis,* Boucek, *Acta ent. Mus. Nat. Pragae,* 27 (1) : 31.
1960 *Chalcis,* Habu, *Bull. Nat. Inst. agric. Sci. Japan,* (C) 11 : 333.
1979 *Chalcis,* Krombein *et al.,* Hymen. N. America, 1 : 863.

Head wide; antennal sockets widely separated from each other, distinctly above the level of lower orbital border; fronto-clypeal suture absent or only trace; mandible with 3 teeth on the right; scrobe deep; antennae long; scape longer in female than in male; reaching front ocellus; pedicel and annellus short; club distinctly triarticulate; pronotum triangularly emarginate in the middle behind; scutellum more or less bilobed apically; fore wings with veins *m* and *pm* long; hind coxae long, cylindrical; hind femora with several simple teeth; middle tibia without spur; claw simple in female and bifid in male; abdominal petiole long, longer in male than in female; abdomen globose; first tergite large, 0.50 of the surface, convex, straight behind.

Species parasitize Diptera, especially Stratiomyidae.

Type-species : Chalcis sispes Fabricius

Chalcis nigrorufa (Walker)

1852 *Smicra nigrorufa,* Walker, *Ann. Mag. nat. Hist.,* 10 : 47.
1909 *Smicra nigrorufa,* Schmiedeknecht, *Gen. Ins.,* 97 : 36.
1938 *Chalcis nigrorufa,* Mani, *Cat. Indian Ins.,* 23 : 58.

"Mas. Rufa, nigro varia, petiolo nigro, abdomino rufo, antennis nigris, alis limpidis.

Body red, roughtly punctured; head black; sides of the front tawny; mouth tawny; feelers black; breast, hind-chest, paraptera, axillae and sides of the middle chest black; three black stripes on the shield; the side pair broad and oblique; a three-lobed black mark on the scutcheon; petiole black, slender, cylindrical, smooth, shining; abdomen smooth, shining, short, globose, less than twice the length of the chest; legs red; hips black; anterior thighs black at the base; middle shanks striped with brown towards the base; hind-shanks at the base and at the tips and hind-feet black; wings colourless; veins brown; humerus near half the length of the wing; ulna not one-third of the length of the humerus; radius much longer than the ulna; cubitus about one-fourth of the ulna; brand rather large, slightly forked. Length of the body 2.50 lines; of the wings 5 lines.

East Indies. In the British Museum."

Spilochalcis Thomson

1820 *Chalcis,* (partim) Dalman, *Svensk. Vet.-Akad. Handl.* 41 : 141.
1875 *Spilochalcis,* Thomson, *Hym. Skandin.,* 4 : 15.
1888 *Diplodontia,* Ashmead, *Ent. Amer.,* 4 : 15.
1904 *Spilochalcis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 251, 253.
1904 *Eustypiura,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 253.
1904 *Enneasmicra,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 252.
1904 *Octosmicra,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 252, 253.
1904 *Heptasmicra,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 252, 253.
1904 *Pentasmicra,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 252.
1904 *Tetrasmicra,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 252, 254.
1904 *Trismicra,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 252, 254.
1909 *Spilochalcis,* Schmiedeknecht, *Gen. Ins.,* 97 : 37.
1909 *Spilosmicra,* Cameron, *Trans. Amer. ent. Soc.,* 35 : 422.
1935 *Spilochalcis,* Mani, *Rec. Indian Mus.,* 37 : 251.
1938 *Spilochalcis,* Mani, *Cat. Indian Ins.,* 23 : 58.
1951 *Spilochalcis,* Boucek, *Acta ent. Mus. Nat. Pragae,* 27 (1) : 30.
1960 *Spilochalcis,* Habu, *Bull. Inst. agric. Sci. Japan,* (C) 11 : 339..
1979 *Spilochalcis,* Krombein *et al.,* Hymen. N. America, 1 : 864.

Antennae inserted far from each other; frontoclypeal suture absent, but depressed as trace; mandible generally with 3 teeth; scape more or less thicker in male than in female; pedicel and annellus short in male; club triarticulate in both sexes; fore wings with veins *m* and *pm* long; hind coxae cylindrical, elongate; hind femora with

3-28 teeth; middle tibia with distinct spur; claws simple; abdomen with petiole short; hypopygium in female not evident; ovipositor sheath slightly exserted.

The species parasitize pupae of Lepidoptera, Coleoptera, Hymenoptera and sometime Diptera-Cyclorrhapha.

Type-species : Spilochalcis xanthostigma (Dalman)

KEY TO SPECIES

1. Body larger than 5.00 mm.	*Spilochalcis simlaensis* Cameron
Body not exceeding 5.00 mm in length.	2
2. Propodeum with a pair of short, stout obtuse processes on either side of insertion of petiole; body with yellow spots and markings..	*Spilochalcis indica* Mani
Propodeum without paired toothed processes on either side of the insertion of petiole; body spotted brick-red.	*Spilochalcis fletcheri* Mani

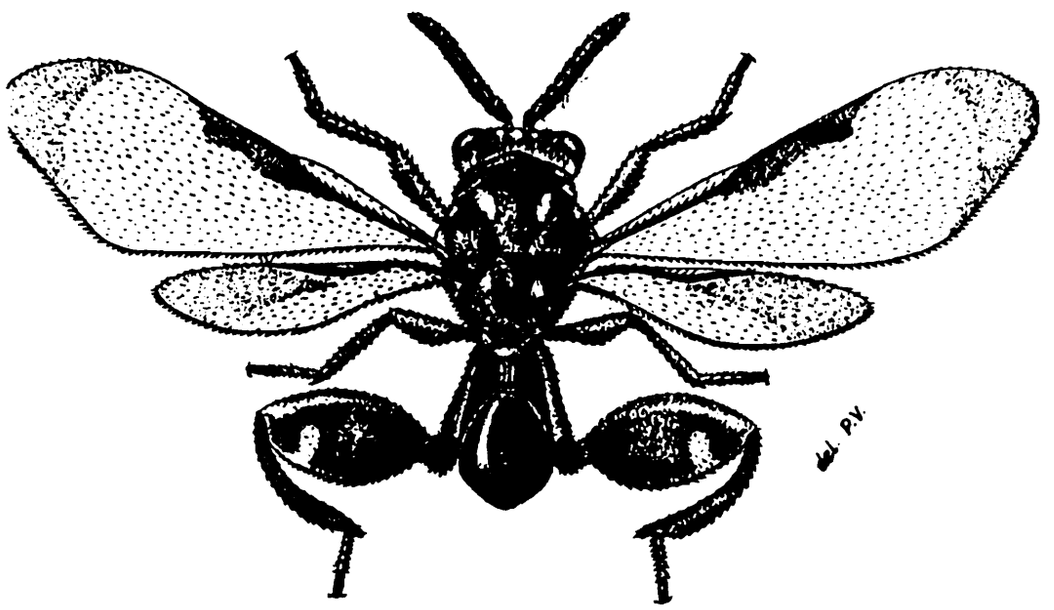

FIG. 99. *Spilochalcis fletcheri* Mani, male.

Spilochalcis fletcheri Mani

(Fig. 99)

1936 *Spilochalcis fletcheri,* Mani, *Rec. Indian Mus.,* 38 : 340.
1938 *Spilochalcis fletcheri,* Mani, *Cat. Indian Ins.,* 23 : 147.
1940 *Spilochalcis fletcheri,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 5.

Female : Length 5.00 mm. Body black, spotted or marked brick-red as follows: scape beneath, frons below the level of median carinate spine between antennal sockets, mandibles, orbital margin

dorsolaterally, 2 narrow and short transverse bands one on either side towards the front margin of pronotum; 2 ovate sublongitudinal short bands inside of and contiguous with the parapsidal furrows anteriorly on mesonotum; suborbicular spots anterolaterally on scapulae; 2 subtriangular spots posterolaterally on scutellum; fore coxa reddish-brown, rest of fore legs yellowish-brown to dark yellowish-brown; hind coxa black, unspotted; hind femora outside with one large oval spot basally beneath; narrow, short, longitudinal stripe subbasally above suborbicular small spot apically above; irregular large spot beneath subapically, not touching the row of teeth; hind tibia wholly dark testaceous; fore wings cloudy antero-apically and anteromedially.

Body moderately clothed with silvery-white setae; antennae about 0.50 of body; second funicular segment long; mesonotum umbilicately punctate; scutellum with a broad median groove; propodeum largely reticulopunctate, without short, stout, blunt processes above the point of attachment of petiole; hind coxae at least equal to hind femora; petiole relatively short.

Type locality : Shillong

Host Tenthredinid *Arge luteiventris* Cameron feeding on *Rosa*

Spilochalcis indica Mani

1935 *Spilochalcis indica,* Mani, *Rec. Indian Mus.,* 37 : 252.
1938 *Spilochalcis indica,* Mani, *Cat. Indian Ins.,* 23 : 59

Female : Length 4.50 mm. Body mostly black, spotted and marked with yellow; scape yellow beneath and brown above; funicle yellowish-brown except for the brown above basally; frons yellow; orbit margined yellow behind; a black spot narrowly margined yellow posteriorly on the occiput between eye and lateral ocellus and just in front of the latter; back of head, occiput, vertex black; gena yellow; thorax mostly black; pronotum yellow except in the mid dorsum and except for a subreniform large black spot on each side posterolaterally; middle of mesoscutum black except for a pair of linear-triangular yellow spots anteriorly and inside of and contiguous with the parapsidal furrows, with the base of the triangles directed anteriorly; scapulae black except for a large broadly triangular yellow spot with rounded angle anterolaterally, with the apex of the triangle reaching farther behind than the middle of mesoscutum; tegulae brown; scutellum yellow but for a median longitudinal black line expanded in front; axillae black; propodeum black; fore legs yellow except for longitudinal dark brown spots above on femora and the middle of tibiae; middle legs similar to the fore legs except that the coxae are mostly testaceous-black; hind legs yellow except for coxa which has a large black spot above basally and for an irregular band broader above than below on the outside and for the spots on the

inner and outer sides of femora and except for the bands on tibiae; pedicel black; abdomen shiny-black, immaculate.

Body moderately densely clothed with silvery-white setae; antennae about 0.33 of body; second funicular segment about 0.50 of the first; head and thorax about 0.50 of body; parapsidal furrows complete; mesoscutum umbilicately punctate; scutellum prominent, with an emarginate raised plate behind and propodeum coarsely tubercular, armed with a pair of somewhat closely approximated, short, stout obtuse processes a little above the attachment of the petiole behind; middle tibiae armed apically; hind coxae about 0.90 of hind femora; hind femora about 2 times as long as wide, basally with one very large tooth followed by numerous minute ones; petiole a little less than 0.33 of abdomen and nearly as long as thick, bicarinate above subapically; abdomen subglobose.

Type locality Shillong

Spilochalcis simlaensis Cameron

1903 *Spilochalcis simlaensis,* Cameron, *J. Bombay nat. Hist. Soc.,* 14 : 438.
1938 *Spilochalcis simlaensis,* Mani, *Cat. Indian Ins.,* 23 : 59.

Female : Length 6.00 mm. Body black; thorax with 5 yellow spots; middle of the mesoscutum reticulate; fore wing hyaline.

Antennae stout, covered closely with a short white pubescence; the underside of the flagellum brownish-red; the last 3 segments become gradually narrowed towards the apex. Head black; inner orbits broadest in the middle; the outer orbits narrowly above, the lower part of the antennae keel and the upper side and the apex of the mandible yellow; front and vertex closely and strongly punctured; the part on either side of the ocelli bearing some large, clearly separated punctures; the frontal depression finely and closely transversely striated; face bluntly keeled in the centre, keel being closely transversely striated; rest is punctured, punctures being large not so closely together, especially on the middle lobe; scutellum rugosely punctured, and somewhat, depressed in the middle; apex bears stout, clearly separated, longitudinal keels; mesonotum stoutly, irregularly reticulated; propleurae rugosely punctured above, below closely articulated, bearing a few irregular striae; base of the mesopleurae smooth and shining; rest irregularly rugose above; middle with a few stout striae; metapleurae coarsely rugosely punctured; mesosternum rugosely punctured; wings hyaline; their middle and apex slightly but distinctly smoky; costa and nervures black; 4 front knees, tibiae and tarsi yellowish-testaceous; hinder trochanters, basal fifth of the hinder coxae on the sides and above, apex above and a mark on the sides near the apex on the lower side; this marking being dilated on the lower side-yellow; hinder coxae as long as the femora and are thickly covered with white hairs; the

under side of the femora is minutely and regularly toothed; hinder tibiae yellow, broadly marked at the base and middle with black; tarsi yellow; abdomen smooth and shining; petiole smooth and 0.50 of the length of the second segment.

Type locality Simla

FAMILY EURYTOMIDAE

1830 *Gynipsida,* Leach, *Edinb. Encycl.,* 9 : 144.
1832 *Eurytomidae,* Walker, *Ent. Mag.,* 1 : 12, 29.
1840 *Eurytomidae,* Westwood, *Intr. modern Class, Ins.,* 2 : 166.
1846 *Eurytomidae,* Walker, *List. Chalcids,* 1 : 8.
1856 *Eurytomidae,* Förster, *Hym. Stud.,* 2 : 19, 23, 44.
1875 *Eurytominae,* Thomson, *Hym. Scandin.,* 4 (1) : 25.
1886 *Eurytominae,* Howard, *Ent. Amer.,* 1 : 19.
1904 *Eurytomidae,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 257.
1909 *Eurytominae,* Schmiedeknecht, *Gen. Ins.,* 97 : 123.
1936 *Eurytomidae,* Bugbee, *Ent. Amer.,* 26 (3) : 170-223.
1938 *Eurytomidae,* Mani, *Cat. Indian Ins.,* 23 : 66, 153.
1950 *Eurytomidae,* Ferrière, *Mitt. Schw. ent. Ges.,* 23 (4) : 378, 379.
1971 *Eurytomidae,* Burks, *Trans. Amer. ent. Soc.,* 97 : 12-89.
1978 *Eurytomidae,* Zerova, *Faun. Ukr. Akad. Nauk.,* 2 (9) : 1-46.
1979 *Eurytomidae,* Krombein *et. al.,* Hymen. N. America, 1 : 835.

Body generally black, often with white or yellow markings; only rarely metallic coloured; head and thorax coarsely punctate; abdomen smooth and shiny; head generally as wide as thorax; antennae usually with upto 11-13 segments, in male often with verticillate hairs; mandibles generally tridentate; pronotum large, quadrate; parapsidal furrows present; axillae not triangularly advanced into scapula; fore wings with vein *st* distinct; hind tibial spurs generally double; abdomen generally oval or rounded, rarely elongate, generally compressed, often petiolate; hind femora not swollen and dentate beneath, hind tibiae not arcuate.

KEY TO SUBFAMILIES

1. Propodeum always longer than scutellum, gradually sloping behind; fore wing with vein *m* at least 2 times *st*. 2

   Propodeum shorter than scutellum, abruptly declivous behind; fore wing with vein *m* generally short and stout. 3

2. Head wider than thorax; vertex on each side with an acute tooth-like or spine-like projection by the side of orbit; abdomen distinctly petiolate. *Aximinae*

   Head not wider than thorax, vertex without a spinous projection in front. *Tetramesinae*

3. Fore wing with vein *m* short, stout, quadrate or semi-circular; antennae with 11 segments in both sexes; abdomen short, rounded or ovate; fore wing often with a rounded dark spot in the middle. *Sycophilinae*

Fore wing with vein *m* more or less elongate. 4

4. Antennae with 10-12 segments and a single annellus in both sexes; in female filiform or slightly swollen apically; in male segments incised apically and constricted into stems and with long verticillate hairs. *Eurytominae*

Antennae with 13 segments, and with 2-3 annelli; in male segments not incised or without verticillate hairs. *Rileyinae*

SUBFAMILY TETRAMESINAE

1904 *Isosomini,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 258, 259.
1909 *Isosomini,* Schmiedeknecht, *Gen. Ins.,* 97 : 126.
1978 *Harmolitini,* Zerova, *Faun. Ukr. Akad. Nauk.* 2(9) : 92.

Body more or less elongate, with fine sculpture; head without spinous projection in front by orbit; antennae in female slightly swollen apically; in male setaceous; funicular segments in male constricted apically into stems and with long hairs; propodeum gradually sloping behind; fore wings with vein *m* slender; abdomen long, conically ovate or pointed in female.

Tetramesa Walker

1798 *Ichneumon,* Fabricius, (partim) *Ent. Syst. Suppl.,* 232.
1832 *Isosoma,* Walker, *Ent. Mag.,* 1 : 13. (preoccupied in Billberg, 1820).
1848 *Tetramesa,* Walker, *List Chalcids Brit. Mus.,* 2 : 54.
1863 *Harmolita,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 58.
1871 *Philachyra,* Haliday, in Walker, *Notes Chalc.,* 7.
1888 *Xanthosoma,* Ashmead, *Ent. Amer.,* 4 : 42.
1888 *Isosomocharis,* Ashmead, *Ent. Amer.,* 4 : 42.
1894 *Xanthosoma,* Ashmead, *Trans. Amer. ent. Soc.,* 21 : 320.
1894 *Isosomacharis,* Ashmead, *Trans. Amer. ent. Soc.,* 21 : 331.
1898 *Harmolyta,* Dalla Torre, *Cat. Hym.* 5 : 154.
1904 *Isosoma,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 259, 260.
1904 *Isosomachalcis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 259, 260.
1904 *Harmolyta,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 376.
1904 *Philachyra,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 260.
1904 *Xanthosoma,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 251, 253.
1909 *Isosoma,* Schmiedeknecht, *Gen. Ins.,* 97 : 128.
1911 *Urios,* Girault, *J.N.Y. ent. Soc.,* 19 : 175.
1919 *Harmolita,* Phillips & Emery, *Proc. US nat. Mus.,* 55 : 433-471.
1919 *Harmolita,* Gahan, *Proc. US nat. Mus.,* 61 (24) : 7.
1921 *Isthmosoma,* Hedicke, *Arch. Naturg.,* 86 (A) 11 : 165.

1922 *Harmolita,* Gahan, *Proc. ent. Soc. Washington,* 24 : 33.
1938 *Isosoma,* Mani, *Cat. Indian Ins.,* 23 : 67.
1957 *Harmolita,* Gahan, *Bull. Brooklyn Ent. Soc.,* 52 : 82.
1958 *Harmolita,* Claridge, *Ent. month. Mag.,* 94 : 81.
1961 *Ahtola,* Claridge, *Trans. Soc. Brit. Ent.,* 14 : 174.
1971 *Harmolita,* Burks, *Trans. Amer. ent. Soc.* 97 : 51.
1978 *Tetramesa,* Zerova, *Faun. Ukr. Akad. Nauk,* 2 (9) : 92.
1979 *Harmolita,* Krombein *et al.,* Hymen. N. America, 1 : 837.
1983 *Tetramesa,* de Santis, *Contr. Amer. ent. Inst.,* 20 : 402.

Body more or less elongate, reticulate, or with fine scattered punctae; antennae filiform, finely pubescent, with 11 segments; 1.1.1.5.3; or 1.1.2.5.2 or 1.1.2.4.3; in female slightly swollen apically; in male funicular segments constricted apically into stems and with long hairs; propodeum long, gradually sloping behind, rugose, often with a median longitudinal furrow; fore wings with vein *m* distinctly longer than *st;* abdomen in female elongate, pointed conical or subfusiform, subpetiolate not or only weakly compressed, fourth tergite never large; tergites subequal; body generally yellow or with yellow spots and markings.

Type-species : Tetramesa crassicornis (Walker)

KEY TO SPECIES

1. Veins *pm* and *st* subequal; ocellocular space 2 times ocellar diameter; first funicular segment 0.66 of scape; funicular segments 2-6 subequal.	*T. indica* (Mani & Kaul)
Veins *pm* and *st* unequal.	2
2. Vein *st* shorter than *pm;* ocellocular space 0.33 of ocellar diameter; first funicular segment about 3.33 times as long as thick.	*T. dalhousiae* (Mukerjee)
Vein *st* longer than *pm;* ocellocular space 2.65 times ocellar diameter; first funicular segment 1.60 times as long as thick	*T deccanensis* (Mukerjee)

Tetramesa dalhousiae (Mukerjee)

(Fig. 100)

1981 *Harmolita dalhousiae,* Mukerjee, *Rec. Zool. Surv. India* (Misc. Pub. Occ. Papers) 25 : 1.

Female : Length 4.36 mm. Body black; eyes and ocelli brown; mandibles brown; scape brownish-black in the basal 0.30; sides of pronotum and tegulae yellowish-brown marked; fore legs reddish-brown except for the black coxae and the basal 0.50 of femora; middle leg dark brown except for the black coxae, brownish-black basal 0.30 of femora and tibia except at base and tip; hind leg brownish-black except for the black coxae and dark brown tarsus; wings entirely light brown.

Head slightly wider than thorax, length to width ratio 550 : 100; viewed in front length to width 84 : 100; generally with well separated shallow punctae, moderately densely clothed with silvery-white hairs; eyes finely and sparsely pubescent; mandibles bidentate; ocellocular space about 0.33 of the ocellar diameter; interocellar space subequal to the ocellocular space; front ocellar space very slightly more than the ocellar diameter; antennae inserted distinctly above the level of lower orbital borders; scrobe sculptured like the rest of head; front ocellus outside scrobe; antennal segments 10 : 1.1.1.6.1; scape slender, cylindrical, about 4.50 times as long as thick; annellus nearly as long as thick; first funicular segment longest, about 2 times pedicel and 3.33 times as long as thick; second funicular segment about 0.70 of the first segment and about 2.36 times as long as thick; third and fourth funicular segments subequal, each segment a little shorter than the second, about 2 times as long as thick; fifth funicular segment about 0.87 of the fourth segment and about 1.75 times as long as thick; sixth segment about 0.22 of the preceding segment and about 1.44 times as long as thick; club about 1.92 times the preceding segment and 2.77 times as long as thick, broadly obtusely pointed apically.

Thorax closely umbilicately punctate; parapsidal furrows complete, deep; pronotum : mesonotum : scutellum ratio 8 : 10 :10; propodeum without carina; fore wing almost 3 times as long as thick; veins *m : pm : st* ratio 100 : 64 : 45; vein *sm* with 19 setae; veins *m* and *pm* each with about 10 setae; hind wing about 5 times as long as wide; hind coxae about 1.64 times longer than tnick; femora somewhat thickened in the middle, about 1.67 times coxae and about 4 times as long as thick; tibia about 1.44 times femora, 9.71 times as long as thick, dorsally with stiff bristles; tibial spur almost 0.30 of metatarsus; tarsus about 0.82 of tibia; metatarsus about 0.26 of tibia and about 0.33 of tarsus.

Abdomen smooth, shiny, about 0.56 of the body, with short and transverse petiole; fourth tergite slighlty longer than the third; ovipositor slightly exserted.

Male : Length 3.12 mm. Body black, clothed with silvery-white hairs; eyes and ocelli brown; mandibles reddish-brown; fore legs reddish-brown except the black coxae, except coxae middle legs dark brown, base and apical 0.70 of femora brown; tibia basally and apically and the tibial spur brown; base and tip of femora brown; tibia dark brown; wings subhyaline.

Head coarsely umbilicately punctate; gena dull, matt; eyes glabrous; antennae inserted a little above the level of lower orbital borders; front ocellus outside scrobe; head viewed above slightly wider than thorax; viewed in front length to width 79 : 100; ocellocular space subequal to interocellar space and about 2 times the ocellar diameter; front ocellar space subequal to ocellar diameter; antennal segments 10 : 1.1.1.6.1; scape short, stout, somewhat

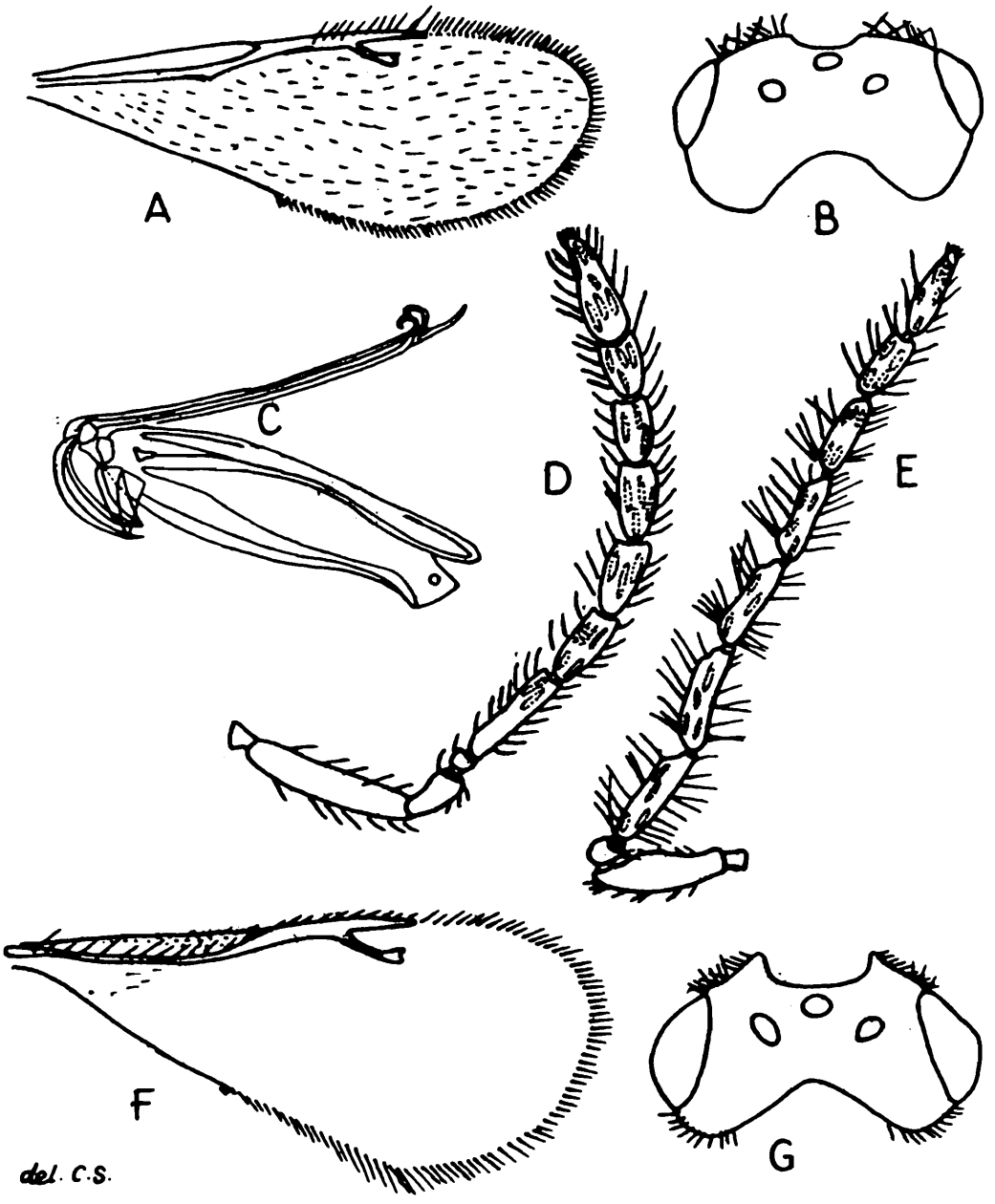

FIG. 100. *Tetramesa dalhousiae* (Mukerjee) : A-D. Female : A. Fore wing; B. Head in dorsal view; C. Genitalia; D. Antenna; E-G. Male; E. Antenna; F. Fore wing; G. Head in dorsal view.

thickened subapically, about 3.02 times as long as thick; pedicel about 0.20 of scape, subglobose; annellus minute; funicular segments much longer than thick; with long verticillate hairs; first funicular segment longest, about 0.87 of scape and about 3.68 times as long as thick; funicular segments 2-5 subequal; club gradually reduced apically, subequal to the fourth funicular segment and about 3.43 times as long as thick.

Thorax umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 6 : 7.5 : 8; fore wing length

to width 100 : 43; veins *m : pm : st* ratio 100 : 89 : 72; vein *sm* with 16 setae; hind coxae about 2 times as long as thick; femora thickened in the middle, about 4.80 times as long as thick; tibia cylindrical, slender and about 1.20 times femora, dorsally with a row of stiff setae; tibial spur almost 0.50 of metatarsus; tarsus about 0.93 of tibia; metatarsus about 0.30 of tarsus.

Abdomen smooth, shiny; petiole matt, including petiole about 0.52 of body; viewed laterally length to height ratio 100 : 53; petiole distinctly longer than coxae, about 3 times as long as thick and about 0.40 of the rest of abdomen; third tergite slightly longer than the rest.

Type locality : Ahla Catchment Area : Dalhousie

Tetramesa deccanensis (Mukerjee)

(Fig. 101)

1981 *Harmolita deccanensis,* Mukerjee, *Rec. Zool. Surv. India* (Misc. Pub. Occ. Pap.) 25 : 6.

Female : Length 2.86 mm. Body yellowish-brown; eyes and ocelli brown; except for the black scape, pedicel and annellus, antennae brownish-black; mandibles reddish-brown; irregular dark patches on thorax inside of the parapsidal furrows, sides of scapula, faintly in front on pronotum and middle of scutellum; legs brown; wings hyaline; abdomen brown.

Head distinctly wider than thorax, length to width ratio 57 : 100; viewed in front length to width ratio 81 : 100; with minute scattered punctae; long hairs on vertex; eyes finely and sparsely pubescent; ocellocular space subequal to the interocellar space and about 2.65 times the ocellar diameter; front ocellar space about 0.83 of the ocellar diameter; antennae inserted above the level of lower orbital border, with 11 segments : 1.1.1.5.3; scape somewhat reduced apically, about 4.66 times as long as thick; pedicel about 0.35 of scape and about 1.50 times as long as thick; annellus almost as long as thick; flagellum with long hairs; first funicular segment about 0.80 of scape and about 1.60 times as long as thick; second funicular segment slightly shorter than the first; third segment subequal to the first; fourth and fifth segments subequal and about 0.87 of the third segment; club subequal to the preceding 2.80 segments combined, first 2 club segments subequal, third segment ovate, with an obtuse nipple-like projection apically.

Thorax finely punctate; propodeum umbilicately punctate; parapsidal furrows complete, deep; pronotum : mesonotum : scutellum ratio 5 : 8 : 8; fore wing nearly 3 times as long as wide; veins *m : pm : st* ratio 100 : 50 : 70; vein *sm* with 14 setae, *m* with 7 and *pm* with 5 setae; hind wing about 5 times as long as wide; hind coxae about 1.33 times as long as thick; femora about 2 times

coxae an somewhat thickened in the middle and about 3.30 times as long as thick; tibiae with 9 stiff bristles and about 1.35 times femora; tibial spurs unequal, shorter spur about 0.45 of the longer, the longer spur about 0.55 of metatarsus; tarsus about 0.73 of tibia, metatarsus about 0.33 of tarsus.

Abdomen about 0.47 of body, viewed laterally length to height ratio 100 : 44; smooth, shiny; petiole very short, transverse; ovipositor slightly exserted.

Type locality Kelghar-Meta-Satara Road

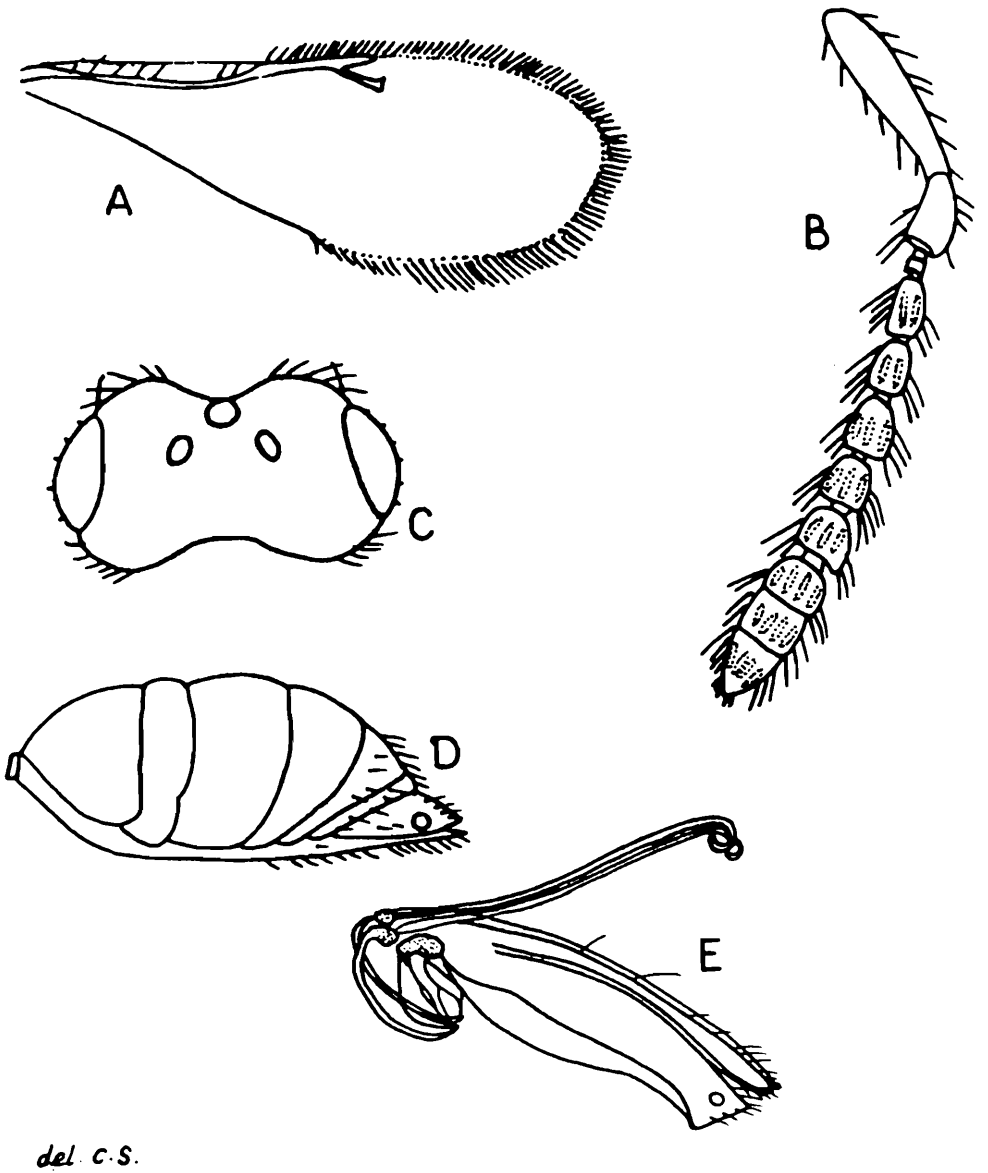

FIG. 101. *Tetramesa deccanensis* (Mukerjee), female : A. Fore wing; B. Antenna; C. Head in dorsal view; D. Abdomen; E. Genitalia.

Tetramesa indica (Mani & Kaul)

1974 *Isosoma indica,* Mani & Kaul, *Mem. School Ent.*, 3 : 51.

Female : Length 3.25 mm. Body brownish-black; head brownish-black; antennae, tibiae and tarsi ferruginous-brown; coxae and femora darker brown; wings hyaline; veins brown.

Head viewed above width to length 100 : 58; ocellocular space equal to 2 occellar diameters; interocellar space equal to 4 ocellar diameters; front ocellar space almost equal to ocellocular space; front ocellus within the scrobe; vertex with obscure, shallow, moderately close punctae; head viewed from front width to length 100 : 80; interorbital space about 0.60 of head width; scrobe well developed; face sculptured like vertex; head viewed from side height to thickness 100 : 70; genal carina well developed; antennae inserted almost on level of the lower orbital border, with 12 segments; 1.1 1.6.3; scape about 4 times as long as thick; pedicel about 0.40 of scape; annellus as wide as pedicel; first funicular segment longest, about 0.66 of scape; second segment about 0.50 of the first segment; funicular segments 2-6 subequal; club about 0.70 of the 2 preceding segments combined.

Thorax narrower than head, sculptured like head; pronotum : scutum : scutellum ratio 85 : 100 : 75; parapsidal furrows complete; scutellum length to width 100 : 75; propodeum width to length 100 : 50, finely transversely striolate, with a median longitudinal depression that widens behind; fore wing about 2.50 times as long as wide; veins *sm : m : pm : st* ratio 350 : 100 : 66 : 66; hind femora about 3 times as long as thick; tibiae about equal to femora, moderately stout, with a series of stiff spines externally; tarsus about 0.90 of tibia; metatarsus about 0.66 of tibia; tibial spur about 0.33 of metatarsus.

Abdomen elongate-conical, smooth, shiny, with a short petiole, a little over 0.50 of rest of body.

Type locality : Najibabad (Uttar Pradesh)

Host : Reared from bamboo

This species differs from *Tetramesa longicornis* (Motsch.) in the much shorter antennae.

Tetramesa longicornis (Motschulsky)

1863 *Harmolita longicornis,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36(3) : 58.
1925 *Isosoma longicornis,* Ramakrishna Ayyar, *Spol. Zeyl.*, 13 : 243.
1938 *Isosoma longicornis,* Mani, *Cat. Indian Ins.*, 23 : 67.

Length 3.75 mm. "Elongata, angustata, convexa, subgibbosa, nitida, nigra, geniculis, tibiarum apice tarsique testaceis; capite crassiusculo, subdepresso, vix punctato, oculis rufescentisbus,

antennis corporis longitudine, linearis; thorace capite angustiore, subcylindrico, pronoto sparsim punctato, angulis antice subprominulis, testaceis, mesonoto elongato-triangulari, apice rotundato, subopaco, metanoto elongato-attenuato, inaequaliter-rugose; abdomine thorace angustiore et minore, fere cylindrico, glaberrimo; femoribus claviformibus, posticis non incrassalis."

Type locality : Summit of Mt. Patannas (Ceylon)

SUBFAMILY SYCOPHILINAE

1904 *Decatomini,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 265.
1909 *Decatomini,* Schmiedeknecht, *Gen. Ins.,* 97 : 132.
1978 *Eudecatominae,* Zerova, *Faun. Ukr. Akad. Nauk.,* 2(9) : 429.
1979 *Eudecatominae,* Krombein *et al.,* Hymen. N. America, 1 : 842.

Fore wing with vein *m* short, stout, resembling a pterostigma; often with a clouded spot behind; antennae generally similar in the 2 sexes; hind tibiae above with stiff bristles.

Sycophila Walker

1871 *Sycophila,* Walker, *Notes Chalc.,* 4 : 63.
1875 *Isanisa,* Walker, *Entomologist,* 8 : 15.
1875 *Pseudisa,* Walker, *Entomologist,* 8 : 15.
1888 *Eudecatoma,* Ashmead, *Ent. Amer.,* 4 : 42.
1888 *Decatomidea,* Ashmead, *Ent. Amer.,*4 : 42.
1894 *Eudecatoma,* Ashmead, *Trans. Amer. ent. Soc.,* 21 : 319.
1894 *Decatomidea,* Ashmead, *Trans. Amer. ent. Soc.,* 21 : 322.
1904 *Decatomidea,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 262.
1904 *Eudecatoma,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 265.
1904 *Sycophila,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 238, 241.
1909 *Sycophila,* Schmiedeknecht, *Gen. Ins.,* 97 : 95.
1909 *Eudecatoma,* Schmiedeknecht, *Gen. Ins.,* 97 : 134.
1938 *Sycophila,* Mani, *Cat. Indian Ins.,* 23 : 34.
1944 *Eudecatoma,* Hinks, *Proc. R. ent. Soc. London,* (B) 13 : 37.
1963 *Eudecatoma,* Peck, *Canad. Ent.,* 30 : 833.
1971 *Sycophila,* Burks, *Trans. Amer. ent. Soc.,* 97 : 72, 73.
1978 *Eudecatoma,* Zerova, *Faun. Ukr. Akad. Nauk.,* 2 (9) : 429.
1979 *Eudecatoma,* Krombein *et al.,* Hymen. N. America, 1 : 842.
1979 *Sycophila,* Krombein *et al.,* Hymen. N. America, 1 : 845.
1984 *Sycophila,* Narendran, *Entomon,* 9 (1) : 6.

Female : Scutellum convex, with 2 deep furrows; agreeing with *Idarnes* and *Koebelea* both of which are separated from *Sycophila* by the broad, flat and quadrate scutellum, which is however convex; vein *pm* absent; ovipositor shorter than body.

Male : Antennae with 13 segments, including 2 annelli, pronotum quadrate; narrower than mesonotum; parapsidal furrows distinct; vein *pm* only indicated; abdomen oval, depressed, much shorter than thorax, shortly petiolate, with short aedeagus.

Type-species : Sycophila decatomoides Walker

KEY TO SPECIES

1. Fore wings with veins *m, pm* and *st* equal, with a subcircular dark brown spot on vein *m;* scape about 3.70 times as long as thick.	*Sycophila kollimaliana* (Mukerjee)
Fore wings with veins *m, pm* and *st* unequal	2
2. Vein *pm* subequal to *st*.	*Sycophila deobanensis* (Mani & Kaul)
Vein *pm* and *st* unequal.	3
3. First funicular segment shorter than pedicel.	*Sycophila karnatakensis* (Mukerjee)
First funicular segment longer than pedicel.	*Sycophila coorgensis* (Mukerjee)

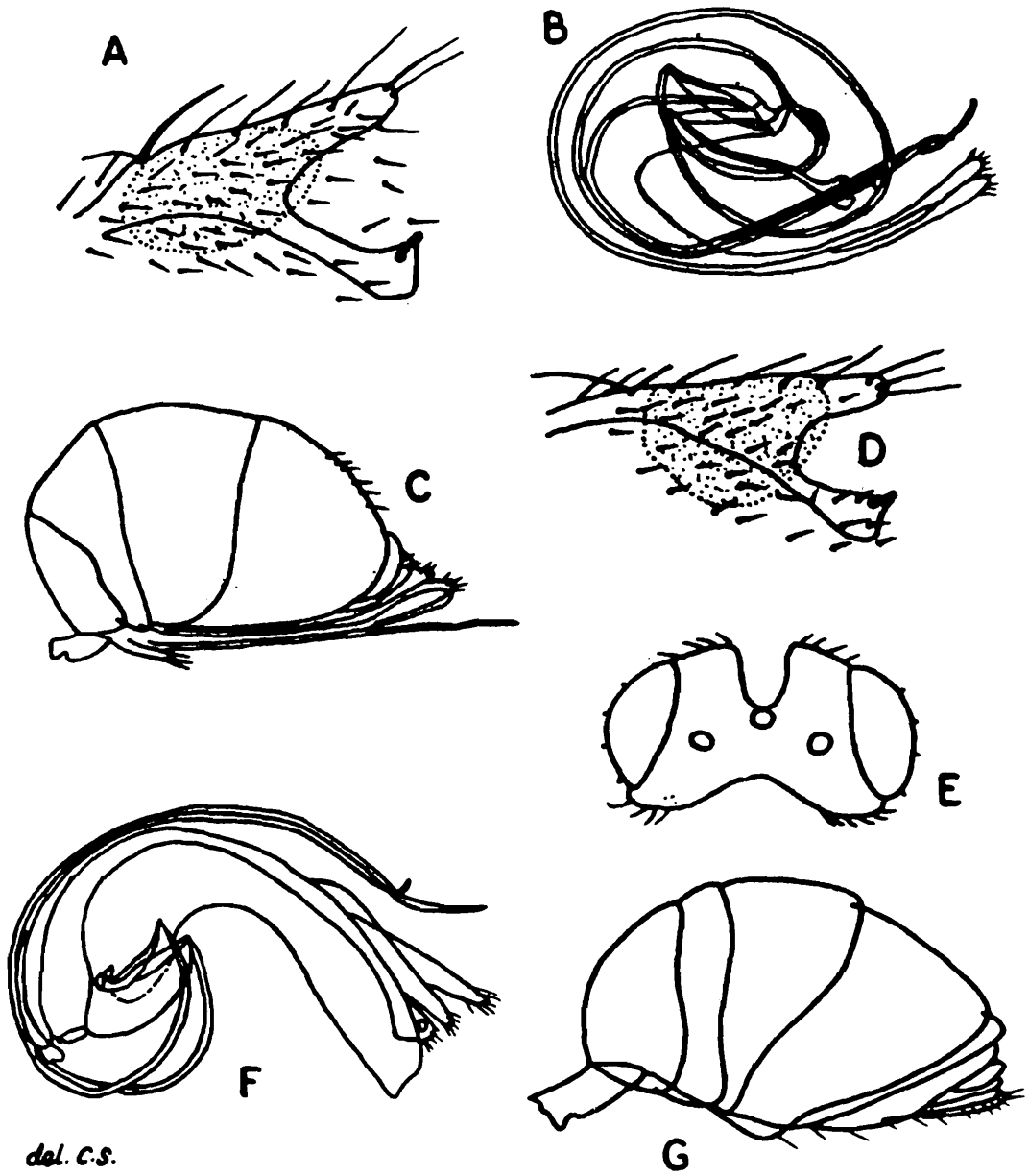

FIG. 102. A-C. *Sycophila kollimaliana* (Mukerjee), female : A. Stigmal area of fore wing; B. Genitalia; C. Abdomen; D-G. *Sycophila karnatakensis* (Mukerjee), female : D. Stigmal area of fore wing; E. Head in dorsal view; F. Genitalia; G. Abdomen.

Sycophila kollimaliana (Mukerjee)

(Fig. 102)

1981 *Decatoma kollimaliana,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 82.

Female : Length about 2.56 mm. Body generally dark brown; eyes black; ocelli yellowish-brown; antennae brown, except for the yellowish-brown scape; pronotum yellowish-brown, thorax otherwise dark brown; legs brownish-yellow; wings hyaline, with a subcircular dark brown spot at vein *m,* otherwise veins brown; petiole black; tergites 1-3 slightly darker dorsally, otherwise dark brown.

Head with the vertex finely reticulate; eyes glabrous; mandibles bidentate; scrobe smooth, with the front ocellus outside; ocellocular space about 1.50 times, interocellar space about 3 times and front ocellar space subequal to the ocellar diameter; antennae inserted on level of the lower orbital borders, with 11 segments; 1.1.1.5.3; scape slightly thickened basally, 3.70 times longer than thick; pedicel about 0.40 of scape; first funicular segment longest, about 1.83 times as long as thick and about 1.37 times pedicel; segments 2-5 subequal, each about 0.70 of the first; club subequal to the preceding 2.30 segments combined, indistinctly triarticulate; first segment slightly less than the last funicular segment; second and third segments combined about 2 times the first; third segment obscurely separated from the second, conic-ovate.

Thorax with widely separated, shallow punctae on pronotum; scutellum transversely rugose; propodeum with close, minute, shallow punctae; parapsidal furrows complete; propodeum with median longitudinal carina; pronotum : mesonotum : scutellum ratio 5 : 10 : 9; fore wing length width ratio 100 : 45; veins *m : pm : st* ratio 100 : 100 : 100; vein *sm* with 12 setae, *m* and *pm* with 8 setae; hind wing about 4 times as long as wide; hind coxae about 1.87 times as long as thick; femora about 1.66 times the coxae and about 3.33 times as long as thick; tibiae slender, about 1.20 times femora, spurs double, unequal, shorter spur about 0.60 of the longer, which latter is about 0.62 of metatarsus; tarsi about 0.86 of tibiae; metatarsus about 0.30 of tarsus.

Abdomen smooth, about 0.42 of body; viewed laterally somewhat oval, length to height 100 : 75; petiole shorter than hind coxae and about 2 times as long as thick; ovipositor well exserted.

Type locality : Kollimalai

Sycophila deobanensis (Mani & Kaul)

1974 *Eudecatoma deobanensis,* Mani & Kaul, *Mem. School Ent.,* 3 : 58.

Male Length 3.50 mm. Body black; head below the antennal sockets, gena, the sides of pronotum, mesopleura, scapulae laterally,

propodeum except for the median longitudinal sulcus ferruginous-brown; legs brown; abdomen blackish-brown; scape yellowish-brown, rest of antennae black; wings hyaline; veins brown.

Head viewed above width to length 100 : 55; vertex coarsely punctate; ocellocular space equal to about 3 ocellar diameters; front ocellar space equal to ocellar diameter; occiput emarginate; head viewed in front width to length 100 : 80, coarsely punctate; scrobe wide, moderately deep, with front ocellus at its apex; head viewed laterally height to thickness 100 : 65; gena about 0.66 of eye, genal carina well developed; antennae inserted a little above the lower orbital border, with 10 segments: 1.1.1.4.3; scape about 3 times as long as thick; annellus short; first funicular segment about 0.70 of scape; funicular segments 2-3 subequal, but a little shorter than first; club equal to the preceding 2 segments combined; all funicular segments uniformly plumose.

Thorax distinctly narrower than head, closely umbilicately punctate; pronotum : mesonotum : scutellum ratio 164 : 100 : 72; pronotum quadrate, width to length 100 : 70; parapsidal furrows complete; scutellum as wide as long; propodeum sculptured like scutellum, about 2.60 times as long as wide, with distinct median longitudinal sulcus; fore wing a little more than 2 times as long as wide; veins *sm . m : st pm* ratio 350 : 100 : 75 : 75; hind femora swollen, about 3.30 times as long as thick; tibiae a little longer than femora, with a row of spines externally; tibial spur about 0.40 of metatarsus; tarsus about 0.80 of tibia.

Type locality Deoban Range (Chakrata)

Sycophila karnatakensis (Mukerjee)

(Fig. 102)

1981 *Decatoma karnatakensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 79.

Female : Length 2.40 mm. Body black, with reddish-brown; clypeus reddish-brown; eyes and ocelli brown; antennae brown but for the yellowish-brown scape and pedicel; thorax black, with the pronotum laterally, mesopleura and propodeum reddish-brown; legs reddish-brown, tibiae, spurs and tarsi paler; wings hyaline; abdomen brownish-black.

Head with umbilicate punctae, well separated from each other; scrobe smooth, shiny, not carinately margined; ocellocular space about 1.50 times, interocellar space about 3.50 times and front ocellar space about 1.17 times the ocellar diameter; antennae inserted on level of the lower orbital borders; with 9 segments : 1.1.1.5.1; scape elongate, somewhat reduced apically, about 5 times as long as thick; pedicel about 0.37 of scape; first funicular segment about

0.50 of pedicel and 1.17 times as long as thick; second segment about 0.90 of the first, subquadrate; third segment about 1.20 times the second; fourth segment subequal to the third and subquadrate; fifth segment subequal to the fourth; club subequal to the preceding 2.87 segments combined and about 3 times as long as thick.

Thorax closely umbilicately punctate; propodeum deeply reticulate, without median carina; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 7 : 8 : 10; fore wing a little more than 2 times as long as wide; veins *m : pm : st* ratio 100 : 57 : 54; vein *sm* with 11 setae, *m* and *pm* with 8 setae; hind coxae about 1.33 times as long as thick; femora about 3 times as long as thick; tibiae about 1.19 times femora, with 12 stiff bristles; spurs double, shorter spur about 0.50 of the longer, which latter about 0.64 of metatarsus; tarsus about 0.80 of tibiae, metatarsus about 0.35 of tarsus.

Abdomen smooth, including petiole about 0.47 of body; viewed laterally length to height about 100 : 65; petiole about 0.25 of rest of abdomen; fourth tergite longest; ovipositor slightly exserted.

Type locality : Sullia (Coorg)

Distribution : Kallar, Tranvancore, Coorg

Sycophila coorgensis (Mukerjee)

1981 *Eudecatoma coorgensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Paper) 25 : 84.

Male : Length 3.00 mm. Body black, with yellowish-brown; head yellowish-brown; vertex black; eyes and ocelli dark brown; antennae dark brown, except for the yellowish-brown basal 0.50 of scape below; thorax black; pronotum yellowish-brown at the sides and with an oblique longitudinal narrow yellow band on either side of the median line, diverging behind; scapula with a narrow yellow band at the sides; scutellum with a semi-circular spot anterolaterally; mesopleura yellowish-brown; legs brown except for the dark brown hind coxae; wings hyaline; petiole black; aedeagus brown.

Head closely umbilicately punctate; gena and clypeus longitudinally striate; eyes glabrous; mandibles bidentate; scrobe smooth, shiny, with the front ocellus inside; ocellocular space about 1.60 times, interocellar space about 1.80 times and the front ocellar space about 0.60 of the ocellar diameter; antennae inserted above the level of lower orbital borders, with 10 segments; 1.1.1.6.1; scape slender, about 4.25 times as long as thick; pedicel about 0.25 of scape; funicular segments slender, with long verticillate hairs; first and second funicular segments subequal, each about 3 times the pedicel; third funicular segment about 0.84 of the second; fourth segment very slightly longer; fifth and sixth segments subequal; club subequal to the preceding 1.40 funicular segments combined.

Thorax with umbilicate punctae separated by their own diameter; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 10 : 20 : 18; fore wing length to width ratio 100 : 45; veins *m : pm : st* ratio 100 : 100 : 75; vein *sm* with 16 setae, veins *m* and *pm* with 6 setae; hind wing about 3 times as long as wide; hind coxae about 1.22 times as long as thick; femora stout, about 1.20 times coxae; tibiae slender, about 1.10 times femora, dorsally with a row of 8 stiff bristles, spurs unequal, double, shorter spur about 0.75 of the longer, which latter is 0.90 of metatarsus; tarsi about 0.75 of tibiae, metatarsus about 0.30 of tarsus.

Abdomen smooth, about 0.40 of body; viewed laterally length to height ratio 100 : 90; petiole longer than hind coxae and about 0.56 of the rest of abdomen; third tergite longest.

Type locality : Mercara (Coorg)

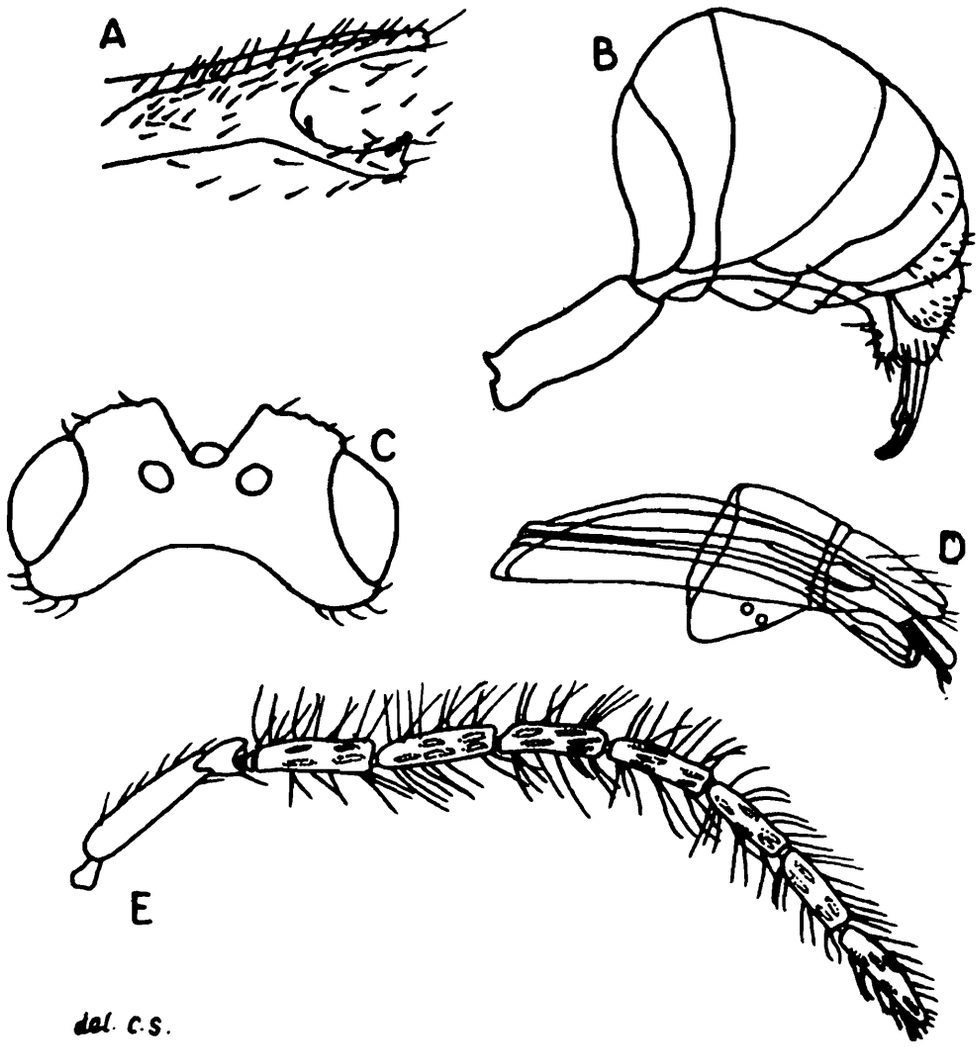

FIG. 103. *Sycophila coorgensis* (Mukerjee), male : A. Stigmal area of fore wing; B. Abdomen; C. Head in dorsal view; D. Genitalia; E. Antenna.

SPECIES INCERTAE SEDIS

Sycophila decatomoides Walker

1871 *Sycophila decatomoides,* Walker, *Notes Chalc.,* 4 : 64.
1909 *Sycophila decatomoides,* Schmiedeknecht, *Gen. Ins.,* 97 : 95.
1938 *Sycophila decatomoides,* Mani, *Cat. Indian Ins.,* 23 : 35.

Type locality : 'India'

Sycophila megastigmoides Walker

1871 *Sycophila megastigmoides,* Walker, *Notes Chalc.,* 4 : 64.
1875 *Pseudisa smicroides,* Walker, *Entomologist,* 8 : 15.
1909 *Sycophila megastigmoides,* Schmiedeknecht, *Gen. Ins.,* 97 : 95.
1938 *Sycophila megastigmoides,* Mani, *Cat. Indian Ins.,* 23 : 35.

Type locality : 'India'

SUBFAMILY EURYTOMINAE

1904 *Eurytomini,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 260.
1909 *Eurytomini,* Schmiedeknecht, *Gen. Ins.,* 97 : 134.
1978 *Eurytominae,* Zerova, *Faun. Ukr. Akad. Nauk.* 2(9) : 203.
1979 *Eurytominae,* Krombein, *et. al.,* Hymen. N. America, 1 : 849.

Head compact; head and thorax coarsely umbilicately punctate, dull; generally black, rarely metallic coloured; antennae with 10-12 segments and single annellus; in female filiform or slightly clavate apically; in male strongly constricted into stems apically and with long verticillate hairs; fore wing with vien *m* not thickened, more or less long; abdomen short, oval, compressed.

KEY TO TRIBES

1. Frons broadly concave, with strong lateral carinate margin, parallel to and contiguous with the orbital border; fore wing with vein *m* always much longer than thick	*Philoemini*
Frons rounded, never carinately margined; fore wing with vein *m* long or short and stigmated	*Eurytomini*

Tribe PHILOEMINI

KEY TO GENERA

1. Pronotum carinate in front	2
Pronotum not carinate in front	3
2. Pronotal carina continuous; fore wing with vein *m* very short, hardly 0.50 of *st*	*Eurytomaria* Masi
Pronotal carina interrupted in the middle, to form pair of submedian teeth; fore wing with vein *m* subequal to *st*	*Mesoeurytoma* Cameron

3. Scutellum with a conspicuous spine behind; vertex with transverse carina weakly developed; fore wing with vein *m* longer than *st;* petiole short, bidentate — *Acantheurytoma* Cameron

Scutellum not spined; vertex with complete transverse carina; petiole longer than hind coxae — *Philoema* Cameron

Acantheurytoma Cameron

1911 *Acantheurytoma,* Cameron, *Societas Ent.,* 26 : 22.
1971 *Acantheurytoma,* Burks, *Trans. Amer. ent. Soc.,* 97 : 12.
1978 *Acantheurytoma,* Subba Rao, *Proc. Indian Acad. Sci.,* 87 (B) : 295.
1981 *Odonteurytoma,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 44.

Body robust, reminescent of *Eurytoma.* Scrobe deep, conspicuously carinately margined, pre-orbital carina on face close to the orbital border meeting together above transversely over the front ocellus, which lies within the carinate upper margin; vertex transverse; gena shortly margined; antennae inserted distinctly above the lower orbital border, with 10 segments : 1.1.1.5.2 (sometimes apparently 1.1.1.4.3); in female funicular segments submoniliform, elongate; in male with long verticillate setae; pronotum not margined in front; mandibles bidentate; parapsidal furrows complete and usually deep; scutellum without transverse furrows, rounded, convex, armed behind with a long slender spine before tip; thorax generally umbilicately punctate; propodeum strongly declivous, with a broad shallow elongate depression and some short carinae; wings hyaline, discal ciliation fine, marginal fringe moderately developed; vein *m* short, subequal to *pm* and *st*; petiole short or long, conical; abdomen strongly compressed, with the third tergite largest in male and fourth largest in female; ovipositor just exserted.

Type-species : Acantheurytoma spinifera Cameron

Acantheurytoma spinifera Cameron

(Fig. 104 & 105)

1911 *Acantheurytoma spinifera* Cameron, *Societas Ent.,* 26 : 23.
1971 *Acantheurytoma spinifera,* Burks, *Trans. Amer. ent. Soc.,* 97 : 12.
1978 *Acantheurytoma spinifera,* Subba Rao, *Proc. Indian Acad. Sci.,* 87 (B) : 296.
1981 *Odonteurytoma tanjorensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 56.

Female : Length 4.81 mm. Body generally black; head black; eyes and ocelli reddish-brown; mandibles reddish-brown to red; antennae except for the reddish-brown scape brownish-black; fore and middle legs reddish-brown; coxae black; tarsi yellowish-brown; except for base and tip of femora and tibiae, hind leg black; hind tibial spurs yellowish-brown; wings hyaline; abdomen black.

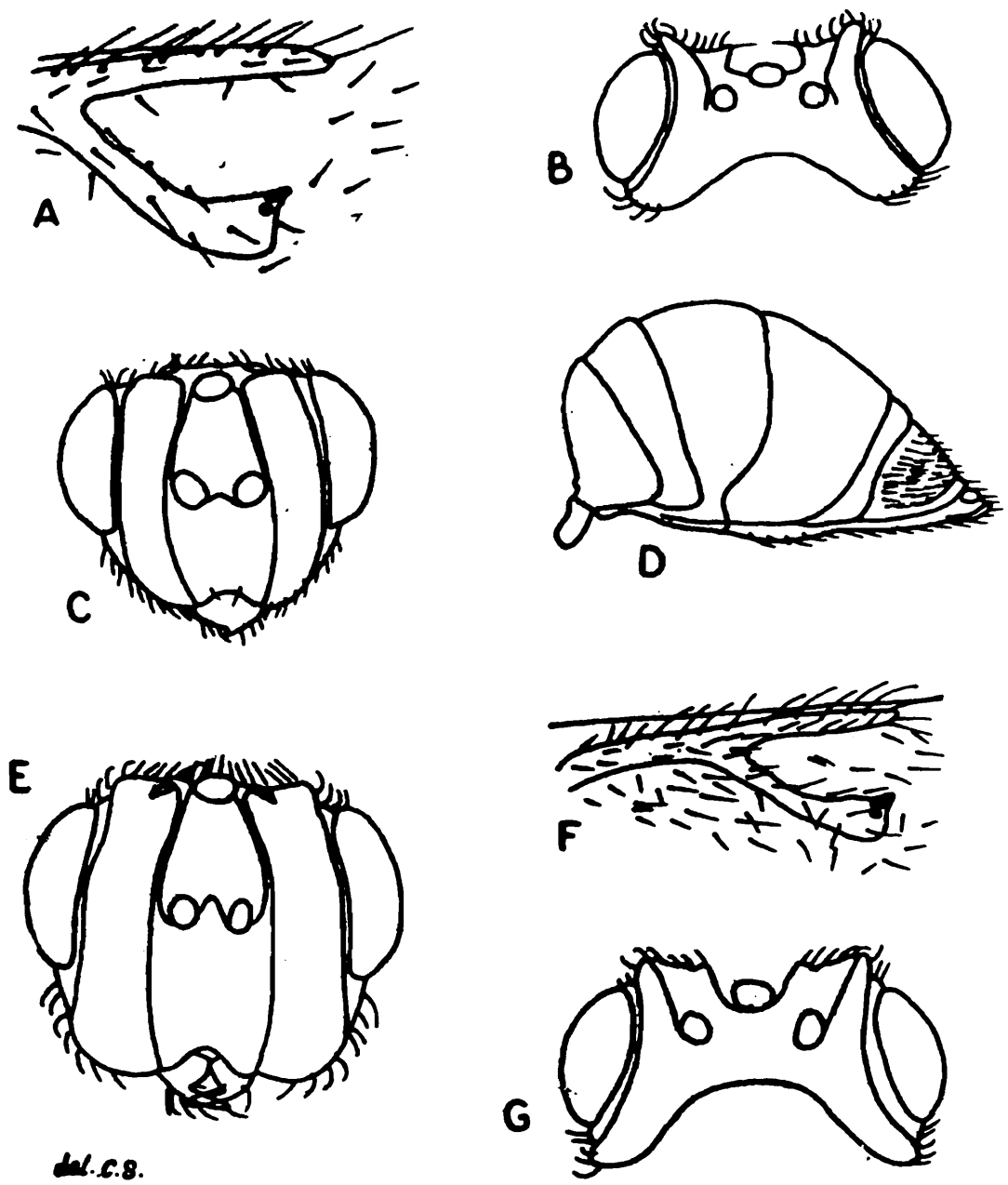

FIG. 104. *Acantheurytoma spinifera* Cameron : A-D. Female : A.Stigmal area of fore wing; B. Head in dorsal view; C. Head in front view; D. Abdomen; E-G. Male : E. Head in front view; F. Stigmal area of fore wing; G. Head in dorsal view.

Head closely umbilicately punctate; gena and clypeus longitudinally striate; vertex densely hairy; eyes glabrous; scrobe smooth, shiny; head viewed from above a little wider than thorax; viewed from front length to width 75 : 100; ocellocular space about 1.70 times ocellar diameter; interocellar space about 2.00 times ocellar diameter; front ocellar space about 0.60 of ocellar diameter; scape abruptly reduced apically, just reaching front ocellus, about 3.77 times as long as thick; pedicel subglobose, about 0.16 of scape;

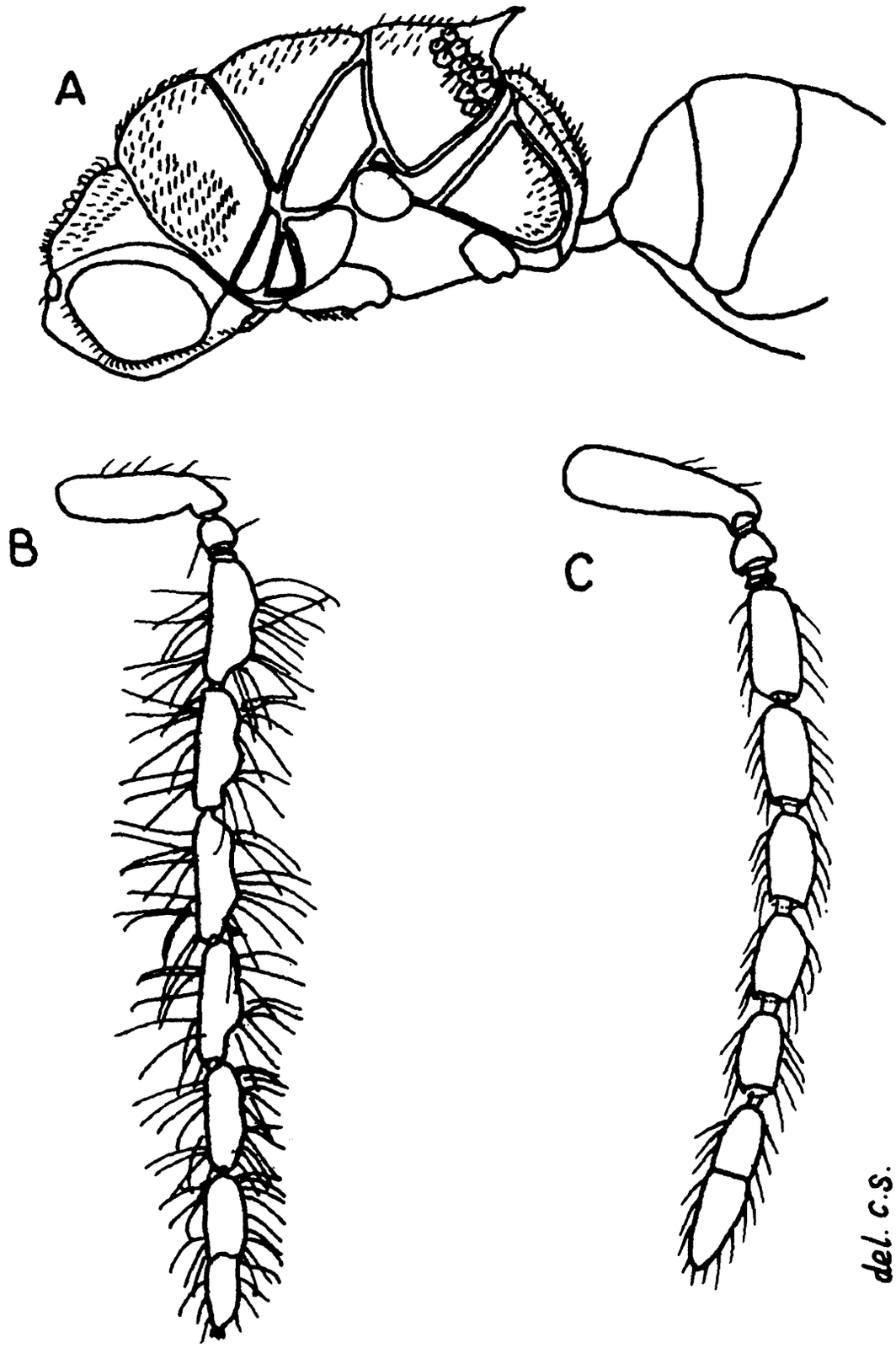

FIG. 105. *Acantheurytoma spinifera* Cameron : A. Body in dorsolateral view to show the scutellar spines, female; B. Antenna, male; C. Antenna, female.

annellus transverse; first funicular segment longest, about 0.58 of scape and about 2.08 times as long as thick; funicular segments 2-4 subequal; the second funicular segment about 0.90 of the first and

about 2.00 times as long as thick; fourth segment about 1.70 times as fifth funicular segment a little shorter than the preceding segment; club subequal to the preceding 1.92 funicular segments combined, with the 2 segments distinctly separated from each other, first segment about 0.80 of the fourth funicular segment, second segment elongate-oval, about 1.50 times the first.

Thorax closely umbilicately punctate; propodeum coarsely reticulate, with paired submedian longitudinal carinae on either side of a median sulcus; pronotum, mesonotum, scutellum in the ratio of 6 : 13 : 13; fore wing length to width ratio 100 : 45; vein *sm* long, with about 10 setae; veins *m* : *pm* *st* ratio 100 : 100 : 100; hind femora about 2.00 times coxa, 4.60 times as long as thick; tibiae subequal to femora, 6.20 times as long as thick; shorter tibial spur about 0.65 of the longer spur, which is about 0.66 of metatarsus; tarsus about 0.83 of tibia, metatarsus about 0.30 of tarsus; petiole, first and second tergites smooth; third tergite onwards with minute scattered punctae; abdomen about 0.41 of body; fourth tergite largest.

Male : Length 4.37 mm. Body generally black; eyes brown; antennae blackish-brown, except for the reddish-brown scape; fore leg brown except for the paler tarsus and black coxae; middle leg brown except for the dark brown femora, black coxae and lighter tarsi; hind leg black, except for femoral tip and tibial spurs and tarsal segments which are light brown; wings hyaline; abdomen black.

Head closely umbilicately punctate; gena obliquely striate; scrobe smooth, shiny; head viewed from above slightly wider than thorax; viewed from front length to width 80 : 100; ocellocular space about 2.00 times ocellar diameter; interocellar space about 2.55 times ocellar diameter; front ocellar space about 0.55 of ocellar diameter; scape short, stout, narrowed abruptly towards tip, about 3.00 times as long as thick; pedicel subglobose; funicular segments with long verticillate hairs; first funicular segment about 0.70 of scape and 2.00 times as long as thick; segments 2-4 subequal to the first; fifth segment about 0.91 of the first and 2.50 times longer than thick; club subequal to the preceding 1.43 funicular segments combined; first club segment about 0.77 of the preceding funicular segment and 2.12 times as long as thick; second segment elongate-oval, subequal to the first.

Thorax closely umbilicately punctate, densely clothed with silvery-white hairs; scutellum and propodeum as in female; fore wing length to width 100 : 48; veins as in female; hind coxae about 1.25 times as long as thick; femora stout in the middle, about 3.84 times as long as thick; tibiae thickened apically, slightly shorter than femora, about 6 times as long as thick; longer tibial spur almost 0.66 of metatarsus, shorter spur about 0.58 of the longer spur; metatarsus about 0.26 of tibia and almost 0.30 of tarsus; abdomen minutely

punctate, about 0.44 of body, petiole about 0.30 of body of abdomen.

Type locality Bombay

Distribution : Bombay, Tanjore, Bangalore, Indonesia (Borneo)

Tribe Eurytomini

1904 *Eurytomini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 260.
1909 *Eurytomini,* Schmiedeknecht, *Gen. Ins.,* 97 : 134.

Body compact; head and thorax as a rule dull, coarsely punctate; generally black; metallic-green only in *Chryseida;* antennae with 10-12 segments, including an annellus, different in the 2 sexes; in female filiform or slightly swollen apically; in male funicular segments deeply incised into slender stems and stout bases, often with verticillate hairs; propodeum short; vein *m* more or less long; abdomen short, ovate, compressed.

Key to Genera

1.	Females	2
	Males	18
2.	Body metallic coloured; head with 4 carinae.	*Chryseida* Spinola
	Body non-metallic	3
3.	Mesonotum smooth or at the most shagreened or only rugulose, not umbilicately punctate	15
	Mesonotum umbilicately punctate	4
4.	First funicular segment subequal to scape or at least not shorter than 0.66 of scape	5
	First funicular segment not longer than 0.50 of scape	6
5.	Scrobe deep, with the front ocellus at apex; antennae filiform, with 11 segments; abdomen compressed, pointed apically	*Bephrata* Cameron
6.	Parapsidal furrows distinctly developed	7
	Parapsidal furrows absent or only indicated anteriorly	17
7.	Scrobe deep, with the front ocellus at apex; scape elongate, more than 2 times first funicular segment; abdomen compressed; hind tibiae with stiff, short bristles	*Prodecatoma* Ashmead
	Scrobe deep or not specially deep, but the front ocellus never at its apex	8
8.	Fore wing with vein *m* longer than *st;* vein *pm* well developed, long	9
	Fore wing with vein *m* short; vein *pm* rarely as long as *st*	16
9.	Hind tibial spur single; funicle moniliform	*Phylloxeroxenus* Ashmead
	Hind tibial spur double	10

10. Fore wing with vein *pm* not much longer than *st* — 11
    Fore wing with vein *pm* at least 2 times as long *st* — 14
11. Fore wing with vein *m* scarcely longer than *st;* antennae clavate — *Eurytomacharis* Ashmead
    Fore wing with vein *m* much longer than *st;* antennae filiform — 12
12. Abdomen not compressed — *Risbecoma* Subba Rao
    Abdomen compressed — 13
13. Second tergite the largest; first tergite with paired carinae — *Plutarchia* Girault
    Second tergite not largest; first tergite without carina — *Eurytoma* Illiger
14. Hind tibiae compressed, dilated — *Eudoxinna* Walker
15. Fore wing with vein *m* scarcely longer than *st;* antennae clavate or subclavate; with 11 segments, abdomen globose — *Systole* Walker
16. Abdomen ovate, subcompressed, fourth and fifth tergites subequal — *Bruchophagus* Ashmead
17. Scrobe deep; abdomen ovate, subcompressed; petiole not very short; fifth tergite longest; funicular segments moniliform — *Decatomidea* Ashmead
18. Body metallic coloured; head with 4 carinae — *Chryseida* Spinola
    Body non-metallic — 19
19. Mesonotum umbilicately punctate — 20
    Mesonotum not umbilicately punctate — 29
20. First funicular segment long — 21
    First funicular segment short — *Bephrata* Cameron
21. Parapsidal furrows absent or incomplete — 31
    Parapsidal furrows complete — 22
22. Scrobe deep, front ocellus outside — 23
    Scrobe deep, front ocellus within its apex — *Prodecatoma* Ashmead
23. Fore wings with vein *m* longer than *st;* vein *pm* well developed, longer than *st* — 24
    Fore wings with vein *m* not longer than *st;* vein *pm* never longer than *st* — 30
24. Hind tibial spur single — *Phylloxeroxenus* Ashmead
    Hind tibial spur double — 25
25. Fore wing with vein *pm* a little longer than *st* — 26
    Fore wing with vein *pm* very long, at least 2 times as long as *st* — 28
26. Fore wing with vein *m* only slightly longer than *st* — *Eurytomacharis* Ashmead
    Fore wing with vein *m* distinctly much longer than *st* — 27
27. Abdomen with the first tergite longest — *Risbecoma* Subba Rao
    Abdomen with fourth tergite longest — *Eurytoma* Illiger
28. Scape long, with a tooth or tubercle apically below; funicular segments constricted and with 2 verticillate hair groups — *Eudoxinna* Walker

29. Fore wing with vein *m* stout, not longer than *st;* funicle with 4 segments; petiole long — *Systole* Walker
30. Funicle with 4 segments; petiole short — *Eruchophagus* Ashmead
31. Scrobe deep — *Decatomidea* Ashmead

Bephrata Cameron

1844 *Bephrata,* Cameron, *Biol. Centr. Amer. Hym.,* 1 : 109.
1909 *Bephrata,* Schmiedeknecht, *Gen. Ins.,* 97 : 137.
1952 *Bephrata,* Risbec, *Mem. Inst. Sci. Madagascar,* (E) 2 : 281.

Head and thorax punctate; first funicular segment elongate; abdomen elongate or rarely longer than thorax and head combined; scrobe deep, with the front ocellus at its apex; antennae with 11 segments; abdomen compressed; fifth tergite largest.

Type-species : Bephrata ruficollis Cameron

KEY TO SPECIES

1. Males — 2
   Female — 4
2. Scape long, slender, at least 4.50 times as long as thick — *Bephrata nepalensis* Mukerjee
   Scape not specially elongate — 3
3. Fore wing about 3 times as long as wide; head wholly umbilicately punctate — *Bephrata dalhousiensis* Mukerjee
   Fore wing a little more than 2 times as long as wide; head longitudinally striate below antennal sockets, otherwise umbilicately punctate — *Bephrata kumaonensis* Mukerjee
4. Funicular segments 2-5 subequal; vein *st* a little more than 0.50 of *pm* — *Bephrata saccharicola* (Mani)

Bephrata dalhousiensis Mukerjee

(Fig. 106)

1981 *Bephrata dalhousiensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 9.

Male : Length 4.28 mm. Body black; eyes and ocelli brown; mandibles dark brown; antennae brownish-black; except for black coxae, legs dark brown; wings subhyaline; abdomen brownish-black except for the black first tergire.

Head a little wider than pronotum and almost 2 times as wide as long; umbilicately punctate, vertex with long hairs; eyes glabrous; ocellocular space about 2.50 times ocellar diameter; interocellar space about 0.75 of the ocellar diameter; front ocellar space a little less than 2.50 times the ocellar diameter; antennae inserted above level

of lower orbital border; scrobe moderately deep, closely minutely punctate, matt, front ocellus well within its tip; mandibles bidentate; antennal segments 10 : 1.1.1.6.1; flagellum with long verticillate hairs; scape fusiform, about 2.66 times longer than thick; pedicel about 0.31 of scape; annellus transverse; funicular segments much longer than thick; first funicular about 6.62 times as long as thick, about 1.50 times scape; segments 2-4 subequal, each segment about 0.83 of the first; fifth segment slightly shorter than fourth; sixth about 0.90 of the fifth segment with a short nipple-like process apically.

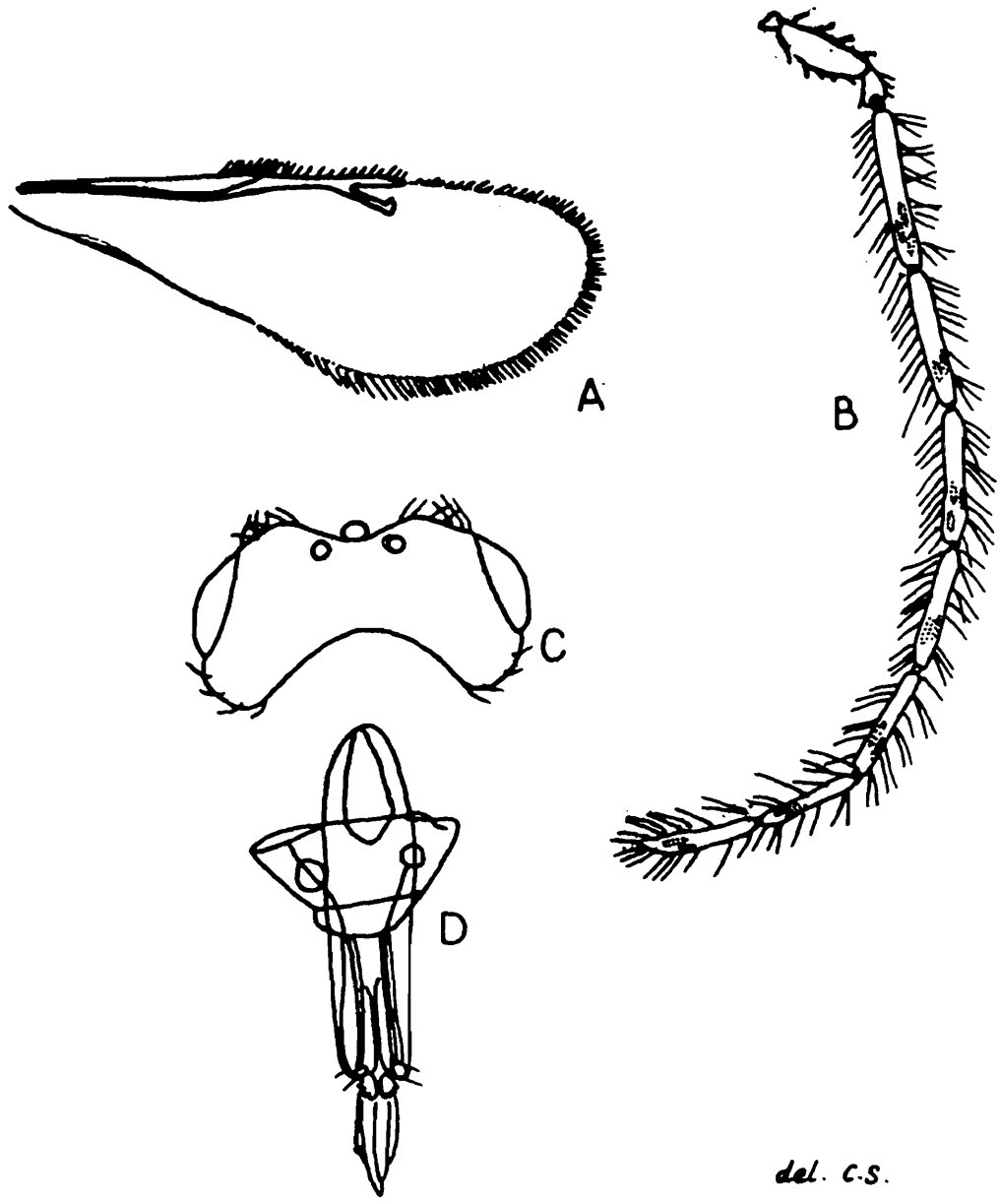

FIG. 106. *Bephrata dalhousiensis* Mukerjee, male : A. Fore wing; B. antenna; C. Head in dorsal view; D. Genitalia.

Thorax closely umbilicately punctate, moderately densely clothed with silvery-white hairs; pronotum : mesonotum scutellum ratio 6 : 11 11; parapsidal furrows complete; scutellum more finely

punctate than the rest of thorax and with a distinct transverse groove; propodeum rugose; fore wing about 3 times as long as wide; veins *m* : *pm* : *st* ratio 100 : 67 : 56; vein *sm* with 17 setae, *m* with 9 and *pm* with 6 setae; hind wing about 5 times as long as wide; hind coxae about 1.66 times as long as thick; femora about 2 times coxa and somewhat uniformly thickened about the middle; tibiae thickened apically, about 1.45 times femora, spurs unequal, shorter spur about 0.40 of the longer, longer spur about 0.40 of metatarsus; tarsus about 0.80 of tibia, metatarsus about 0.31 of tarsus.

Abdomen smooth, shiny, about 0.48 of body, viewed laterally length to height about 100 : 33; petiole distinctly longer than hind coxae and slightly less than 0.25 of the body of abdomen and about 3.07 times as long as thick; fourth tergite longest; aedeagus well exserted.

Type locality Dalhousie : Ahla Catchment Area

Bephrata kumaonensis Mukerjee

(Fig. 107)

1981 *Bephrata kumaonensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 11.

Male Length 4.18 mm. Body black; eye and ocelli brown; palpi brown; mandible reddish; annellus brown; apical 0.18 of fore femora brown; tibia, spurs and tarsus brown; middle and hind legs black except for the brown femoral tips, base and tip of tibiae, spurs and tarsus; wings hyaline.

Head closely umbilicately punctate; clypeus longitudinally striate; vertex finely and densely pubescent; eyes glabrous; head viewed above slightly wider than thorax; ocellocular space about 2.33 times ocellar diameter; interocellar space about 3.50 times ocellar diameter; front ocellar space about 1.40 times ocellar diameter; viewed in front length to width ratio 76 : 100; antennae inserted a little above the level of lower orbital borders, with 10 segmens : 1.1.1.6.1; scape slender, cylindrical, somewhat slightly swollen subapically and about 3.66 times as long as thick; pedicel subglobose; annellus minute; funicular segments constricted apically, with long setae, longer than thick; first funicular segment longest, subequal to scape and about 3.66 times as long as thick; segments 2-4 subequal; fifth segment slightly shorter than the fourth; sixth segment about 0.90 of the fifth; club elongate, slender, cylindrical about 1.22 times the sixth segment and about 5 times as long as thick, conically pointed apically.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 8 : 10 : 12; fore wing length to width 100 : 46; veins *m* : *pm* : *st* ratio 100 : 90 : 73;

vein *sm* with 14 setae; hind coxae about 1.23 times as long as thick; femora about 3.82 times as long as thick, slightly swollen about the middle; tibiae about 1.13 times femora, with a row of stiff bristles dorsally, tibial spurs double, subequal, about 0.40 of metatarsus; tarsus about 0.90 of tibia, metatarsus about 0.33 of tarsus.

Abdomen smooth, shiny, about 0.42 of body; viewed laterally length to height about 100 : 78; petiole matt, distinctly longer than hind coxae and about 0.40 of the rest of abdomen; third tergite largest.

Type locality : Chaubattia (Kumaon Himalaya)

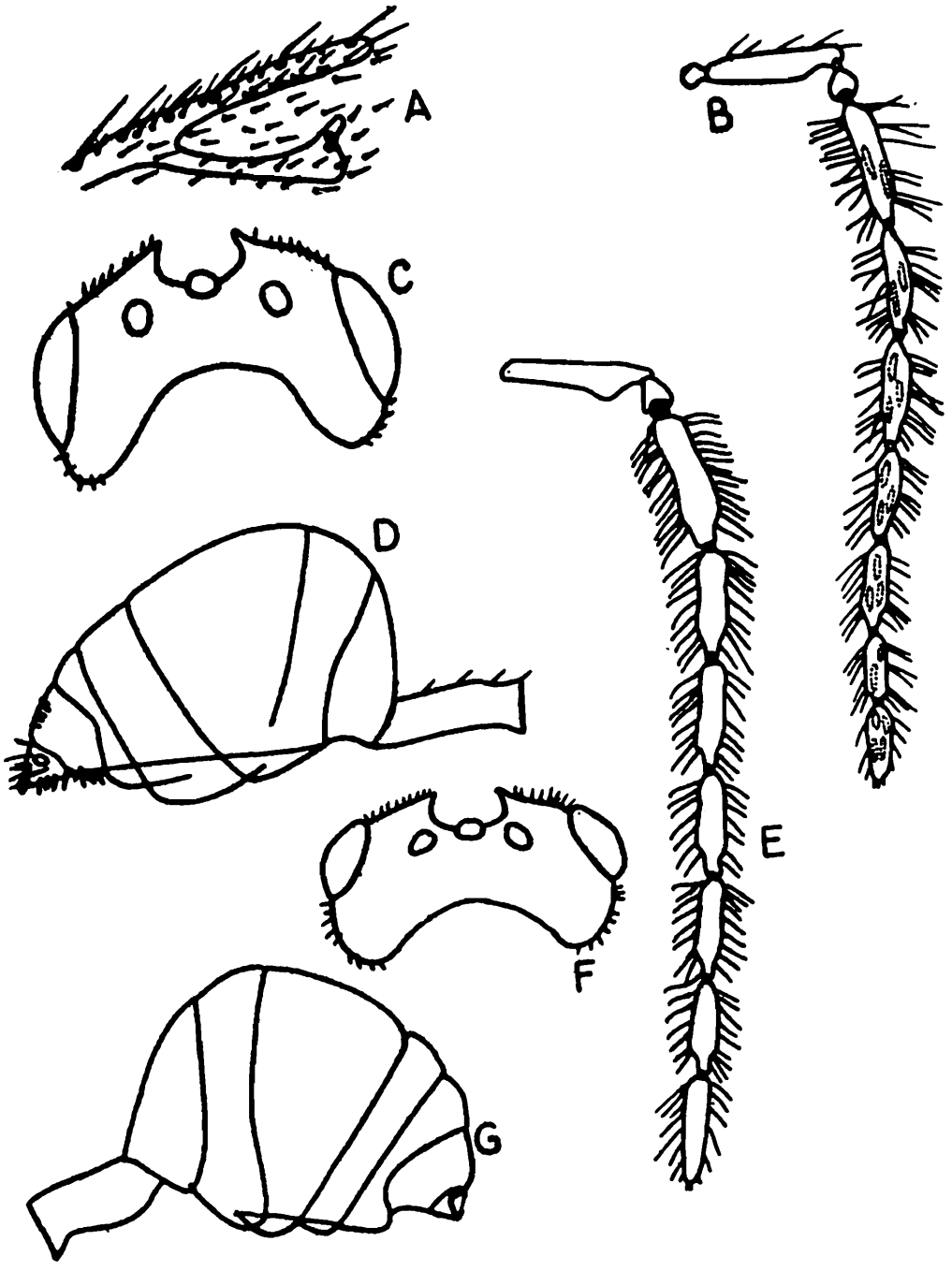

FIG. 107. A-D. *Bephrata nepalensis* Mukerjee, male : A. Stigmal area of fore wing; B. Antenna; C. Head in dorsal view; D. Abdomen; E-G. *Bephrata kumaonensis* Mukerjee, male : E. Antenna; F. Head in dorsal view; G. Abdomen.

Bephrata nepalensis Mukerjee

(Fig. 107)

1981 *Bephrata nepalensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 14.

Male : Length 3.02 mm. Body black; eyes and ocelli dark brown; mandibles reddish-brown; antennae dark brown; legs brown except for black coxae; wings subhyaline.

Head closely umbilicately punctate; eyes glabrous; slightly wider than thorax; ocellocular space about 2 times ocellar diameter; interocellar space about 4 times ocellar diameter; front ocellar space about 1.50 times ocellar diameter; front ocellus within the scrobe; mandibles bidentate; antennae inserted a little above the level of lower orbital borders, with 10 segmens : 1.1.1.6.1; scape about 4.73 times as long as thick; pedicel subglobose; annellus minute; funicular segments much longer than thick and with verticillate hairs; first segment longest and about 0.90 of scape and 4.60 times as long as thick; second segment about 0.87 of the first; third segment about 0.90 of the second; foruth segment about 0.92 of the third and about 4 times as long as thick; fifth segment about 0.80 of the fifth; club slender, cylindrical, about 1.17 times the sixth funicular segment and gradually reduced apically.

Thorax closely umbilicately punctate except for the matt anterior 0.50 of scutum; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 5 : 10 : 10; fore wing length to width ratio 100 : 45; veins *m* : *pm* : *st* ratio 100 : 78 : 59; vein *sm* with 11 setae, veins *m* and *pm* together with 11 setae; hind coxae about 1.70 times as long as thick; femora about 4.26 times as long as thick; tibiae thickened apically, about 1.06 times femora and with 4 stiff bristles dorsally; spurs double, shorter spur less than 0.50 of the longer spur, longer spur about 0.60 of metatarsus; tarsus about 0.94 of tibiae metatarsus about 0.33 of tarsus.

Abdomen smooth, shiny, petiole finely punctate; about 0.40 of body; viewed laterally length to height ratio 100 : 66; petiole equal to hind coxae and about 0.40 of rest of abdomen; third tergite largest.

Type locality : Nepal : Kirtipur (Kathmandu)

Bephrata saccharicola (Mani)

1941 *Bephraloides saccharicola,* Mani, *Indian J. Ent.,* 3 (1) : 27.

Female : Length 4.50 mm. Body black; scape, pedicel and annellus brown; head with silvery-white setae; coxae black; femora reddish-brown; fore and middle tibiae and tarsi brown; hind tibiae dark brown basally and paler apically, wider than thorax, length to width ratio 5 : 6; viewed in front length to width ratio 13 : 15;

interocellar space 1.50 times the ocellocular space; front ocellus outside scrobe; vertex impressed; face carinate around orbit; shallowly umbilicately punctate; carinae between antennal socket and clypeus distinct; face below antennae with converging striations; gena sparsely punctate; scrobe deep, shiny, sending pair of sublateral carinae below; first funicular segment longest, about 0.75 of scape; funicular segments 2-5 subequal; sixth about 0.75 of fifth; club solid, equal to the fifth funicular segment.

Thorax with shallow, setigerous umbilicate punctae; propodeum impressed medially; fore wing veins *m* and *pm* subequal; vein *st* a little more than 0.50 of *pm;* hind tibial spurs double.

Type locality : Bihar (Pusa)

Host : Scirpophaga nivella

Prodecatoma Ashmead

1904 *Prodecatoma,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 261, 263.
1909 *Prodecatoma,* Schmiedeknecht, *Gen. Ins.,* 97 : 138.
1952 *Prodacatoma,* Risbec, *Mem. Inst. Sci. Madagascar* (E) 2 : 286.
1979 *Prodecatoma,* Krombein *et al.,* Hymen. N. America, 1 : 846.

This genus agrees with *Eurytoma.* Head and thorax with large and shallow punctae; scrobe deep, with the front ocellus within its apex; scape elongate, more than 2 times as long as thick; parapsidal furrows complete; fore wing with vein *m* long and thick; vein *pm* very long, much longer than *m;* vein *st* about 0.50 of *m;* hind tibiae with stiff setae above; abdomen compressed, slightly shorter than the rest of body; petiole slender; funicular segments in male with long verticillate hairs.

Type-specis : Prodecatoma flavescens Ashmead

Key to Species

1.	Males	2
	Females	10
2.	Head not wholly umbilicately punctate, gena and clypeus longitudinally striate	*Prodecatoma bengalensis* Mukerjee
	Head wholly umbilicately punctate	3
3.	Small species; body less than 3.00 mm long	4
	Large species; body 3.00 mm or more long	8
4.	Vein *pm* longer than *m*	5
	Vein *pm* equal to or shorter than *m*	6
5.	Funicular segments with long, slender neck-like stems	*Prodecatoma hogenakalensis* Mukerjee
	Funicular segments with short stems	*Prodecatoma brachynerva* Mukerjee

6.	Vein *pm* equal to *m*	*Prodecatoma pongamiae* Mani & Kurian
	Vein *pm* much shorter than *m*	7
7.	Scape 3 times longer than thick	*Prodecatoma fusciscapa* Mukerjee
	Scape at least 5 times longer than thick	*Prodecatoma mangicola* Bhatnagar
8.	Scape 5 times longer than thick	*Prodecatoma bhatiai* Mani & Kaul
	Scape much shorter; at least not 5 times as long as thick	9
9.	Vein *pm* longer than *m; pm : st* ratio 100 : 57	*Prodecatoma postmarginalis* Mukerjee
	Vein *pm* shorter than *m; pm : st* ratio 100 : 63	*Prodecatoma moozhiarensis* Mukerjee
10.	Head uniformly umbilicately punctate	11
	Head largely umbilicately punctate; clypeus and gena longitudinally striate	*Prodecatoma nilamburensis* Mukerjee
11.	Large species; body over 3.00 mm long	12
	Relatively small species; body not exceeding 3 mm in length	13
12.	Vein *pm* subequal to *st* ...	*Prodecatoma pongamiae* Mani & Kurian
	Vein *pm* much shorter than *st*	*Prodecatoma sabiae* Mani
13.	Vein *pm* subequal to *st*	*Prodecatoma beesoni* Mani & Kaul
	Vein *pm* longer than *st*	*Prodecatoma ahlaensis* Mukerjee

Prodecatoma bengalensis Mukerjee

(Fig. 108)

1981 *Prodecatoma bengalensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 62.

Male : Length 3.64 mm. Body black; eyes and ocelli brown; tips of femora and tibiae brown; hind tibiae white in the apical 0.33; hind tibial spurs and tarsi white; wings hyaline.

Head closely shallowly umbilicately punctate; clypeus longitudinally striate; eyes glabrous; mandibles bidentate; scrobes shiny, strongly margined, with the front ocellus at tip; ocellouclar space 1.50 times, interocellar space 2.50 times and front ocellar space subequal to the ocellar diameter; antennae inserted well above the level of lower orbital borders, with 10 segments : 1.1.1.6.1; scape abruptly reduced in the apical 0.50 and about 3.20 times as long as thick; pedicel subglobose; funicular segments constricted apically into stems, with long verticillate hairs; first funicular segment about 0.77 of scape and 3 times as long as thick; second segment about 1 10

times the first; third and fourth segments subequal, longest; fifth segment subequal to the second; sixth about 0.70 of the fifth segment; club subequal to the preceding segment, somewhat reduced apically.

Thorax closely, shallowly, umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 5 : 6 : 10; fore wing length to width ratio 100 : 45; veins *m* : *pm* : *st* ratio 100 : 80 : 53; vein *sm* with 15 short setae, veins *m* and *pm* with 16 setae; hind coxae about 1.46 times as long as thick; femora 4.25 times as long as thick; tibiae a little longer than femora and somewhat

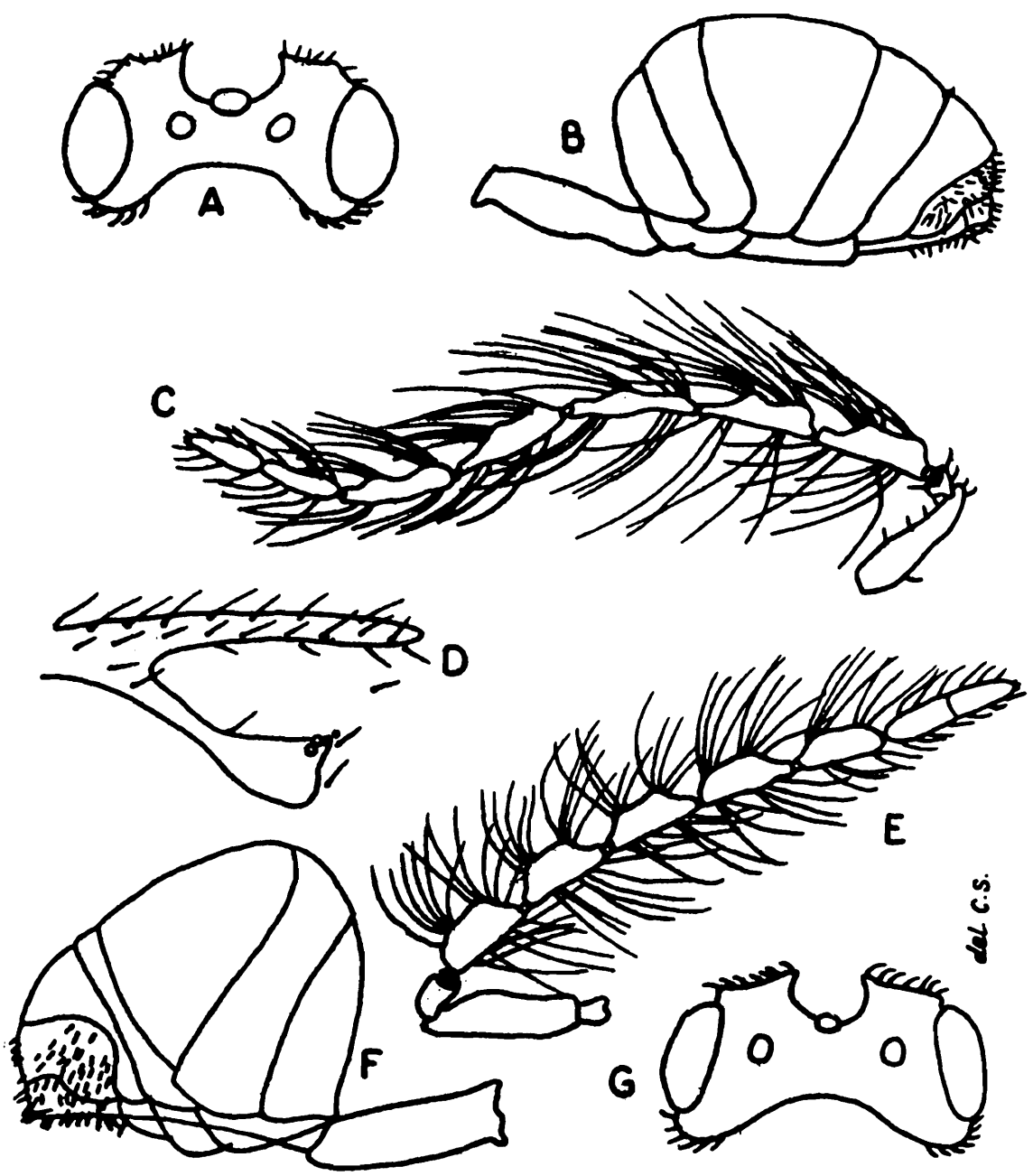

FIG. 108. A-C. *Prodecatoma bengalensis* Mukerjee, male : A. Head in dorsal view; B. Abdomen; C. Antenna; D-G. *Prodecatoma hogenakalensis* Mukerjee, male : D. Stigmal area of fore wing; E. Antenna; F. Abdomen; G. Head in dorsal view.

thicker apically than basally, with 7 stiff bristles above; spurs double, unequal; shorter spur about 0.60 of the longer spur, which latter is about 0.70 of metatarsus; tarsus subequal to tibiae, metatarsus about 0.33 of tarsus.

Petiole 0.60 of abdomen, matt, with a leathery sculpture; abdomen smooth, about 0.44 of body; viewed laterally length to height ratio 100 : 80; third tegite largest.

Type locality : Raja-Bhat-Khawa (North Bengal)

Prodecatoma hogenakalensis Mukerjee

(Fig. 108)

1981 *Prodecatoma hogenakalensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 69.

Male : Length 2.90 mm. Body black; eyes and ocelli brown; pedicel brownish-black; scape brown basally and black apically above; legs yellowish-brown; coxae black; femoral tips white; bases and tips of tibiae, spurs and tarsi white; wings hyaline; abdomen black.

Head closely umbilicately punctate; eyes finely and sparsely pubescent; mandibles bidentate; scrobe smooth, deep, with the front ocellus at apex; ocellocular space 1.80 times, interocellar space 3.30 times and front ocellar space subequal to the ocellar diameter; antennae inserted a little above the level of lower orbital borders, with 10 segments : 1.1.1.5.2; scape short, somewhat thickened subapically, about 3.22 times as long as thick; pedicel about 0.25 of scape, subquadrate; funicular segments constricted apically into stems, with long verticillate hairs; first funicular segment about 0.70 of scape and 2 times as long as thick; second and third segments subequal to the first segment; fourth segment subequal to the third; fifth segment a little shorter; club with distinct sutures, subequal to the first funicular segment, first segment about 0.83 of the last funicular segment, second segment subequal to the first club segment.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 6 : 9 : 9; fore wing about 2 times as long as wide; veins *m* : *pm* : *st* ratio 100 : 111 : 90; veins *sm, m,* and *pm* with 12 setae; hind coxae about 1.13 times as long as thick; femora about 4 times as long as thick; tibiae subequal, with a row of stiff bristles above, spurs double, unequal; shorter spur about 0.66 of the longer spur, which latter is about 0.87 of metatarsus; tarsus about 0.85 of tibiae, metatarsus about 0.25 of tarsus.

Petiole matt, reticulate; abdomen smooth, shiny, including petiole, about 0.40 of body; viewed laterally length to height 87 : 100;

petiole about 1.50 times hind coxae and about 0.75 of the abdomen; third tergite largest.

Type locality : Hogenakal (Eastern Ghats)

Predecatoma brachynerva Mukerjee

1981 *Prodecatoma brachynerva,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 64.

Male : Length 2.34 mm. Body black; eyes and ocelli dark brown; scape light brown, otherwise antennae brown; except for concolorous coxae, legs generally brown; wings hyaline.

Head closely umbilicately punctate; eyes finely and sparsely pubescent; scrobes shiny, with the front ocellus at apex; ocellocular space 1.40 times, interocellar space 3 times and front ocellar space subequal to ocellar diameter; antennae inserted in the middle of face, with 10 segments : 1.1.1.5.2; scape about 3.14 times as long as thick, somewhat reduced in the apical 0.25; pedicel about 0.27 of scape, subquadrate; funicular segments with long verticillate hairs; first funicular segment about 0.63 of scape and about 2 times as long as thick; segments 2-4 subequal and about 0.78 of the first; fifth segment about 0.80 of the fourth; club subequal to the preceding 1.77 segments combined, suture faint, first segment subequal to the preceding funicular segment, second segment subequal to the first, shortly conical.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 75 : 100 ; 110; fore wing length to width ratio 100 : 54; veins *m* : *pm* : *st* ratio 100 : 117 : 100; vein *sm* with 12 setae, *m* and *pm* with 12 setae; hind coxae about 1.50 times as long as thick; femora about 3.50 times as long as thick; tibiae subequal to femora, with 5 stiff bristles above; spurs double, unequal, shorter spur about 0.75 of the longer spur, which latter is about 0.40 of metatarsus; tarsi about 0.85 of tibiae; metatarsus about 0.37 of tarsus.

Abdomen smooth, shiny; including petiole about 0.47 of body; viewed laterally length to height ratio 100 : 48; petiole matt, about 0.25 of the rest of abdomen; third tergite largest; aedeagus slightly protruding beyond tip of abdomen.

Type locality : Mandapam

Prodecatoma pongamiae Mani & Kurian

1953 *Prodecatoma pongamiae,* Mani & Kurian, *Indian J. Ent.,* 15 : 7.

Female Length 2.50-2.70 mm. Body black; legs reddish-brown.

Head viewed above wider than thorax and slightly more than 2 times as wide as long; vertex rugosopunctate, with silvery-white pubescence, emarginate; interocellar space about 3.50 times the ocellocular space and somewhat less than 2.50 times the front ocellar space; occiput dull, slightly excavate; head viewed in front nearly triangular; face rugosopuctate; clypeus dentate in front; head viewed from the side oval, nearly 1.50 times as high as thick; eyes circular, bare; gena about 0.33 of the height of head; temples narrow; antennae inserted somewhat below the level of the lower orbital borders; scape and the scrobes reaching the front ocellus; segments 11 : 1.1.1.5.3; scape nearly 4 times as long as thick and slightly more than 3 times the pedicel; first funicular segment slightly less than 1.50 times the pedicel; other funicular segments gradually becoming shorter, the last funicular segment being only slightly longer than pedicel; club longer than the preceding 2 segments combined, but shorter than scape; pronotum as wide as mesonotum; coarsely rugosely punctate like the rest of thorax and scutellum, parapsidal furrows complete; scutellum convex; propodeum declivous, slightly excavate, rugosopunctate; axillae well separated by the scutellum but not clearly marked out; hind tibial spurs 2, longer spur about 0.75 of metatarsus and shorter spur slightly less than 0.50 of metatarsus; wing about 2 times as long as wide; veins *sm* : *m* : *st* : *pm* 5 : 1 : 1 : 1 ; abdomen slightly longer than thorax, smooth, shiny except at the pubescent tip; first 3 tergites subequal; fourth tergite longest, nearly equal to the preceding segments combined; ovipositor and sheath well exserted.

Male : Length 2.20 mm. Body black; legs reddish-brown; extreme tip of abdomen reddish-brown, otherwise black.

Head viewed from above wider than thorax and about 2.50 times as wide as long; vertex rugosopunctate, with silvery-white pubescence, emarginate; ocellocular space about 0.30 of the interocellar space; interocellar space about 2.30 times the front ocellar space; occiput dull, slightly excavate; head viewed from front nearly triangular; face rugosopunctate, with silvery-white pubescence; scrobe reaching nearly the front ocellus; clypeus dentate in front; head viewed from side with gena about 0.33 of eye; antenna inserted in the middle of face; scape 3 times as long as thick; pedicel about 0.33 of the scape; prothorax as wide as mesothorax; coarsely rugosely punctate like the rest of thorax; parapsidal furrows well developed, complete; scutellum longer than mesonotum; propodeum declivous and rugosostriate; hind tibial spurs 2; longer spur about 0.80 of metatarsus; shorter spur slightly less than 0.50 of metatarsus; fore wing about 2 times as long as wide; veins *sm* : *m* : *st* : *pm* ratio 5 : 1 : 1 : 1; petiole somewhat less than 0.33 of abdomen; abdomen slightly shorter than thorax; smooth and shiny except for the pubescent tip; first 2 tergites subequal; third tergite largest and covers almost 0.50 of the dorsum.

Type locality Bangalore

Host : Asphondylia pongamiae Felt from galls on *Pongamia glabra* Vent.

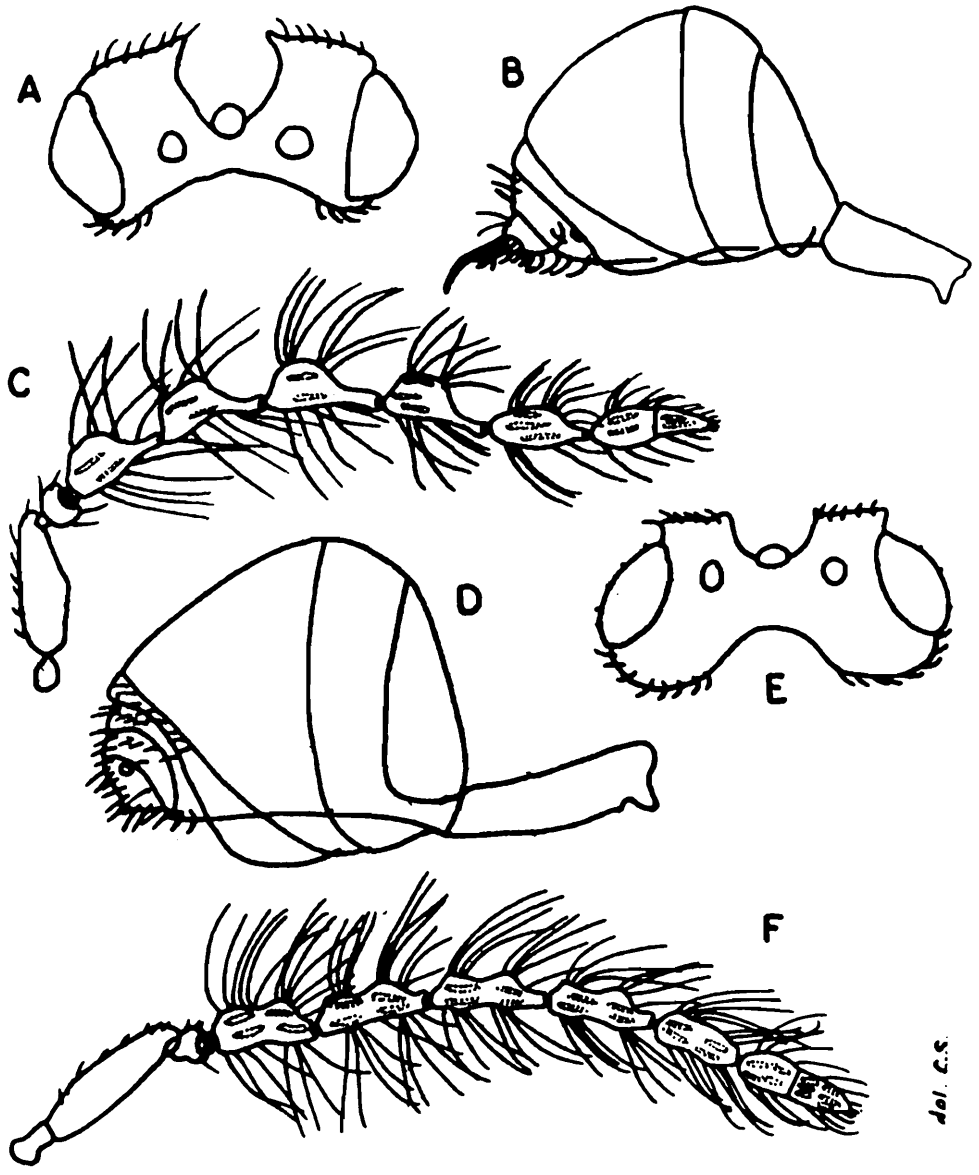

FIG. 109. A-C. *Prodecatoma fusciscapa* Mukerjee, male : A. Head in dorsal view; B. Abdomen; C. Antenna; D-F. *Prodecatoma postmarginalis* Mukerjee, male : D. Abdomen; E. Head in dorsal view; F. Antenna.

Prodecatoma fusciscapa Mukerjee

(Fig. 109)

1981 *Prodecatoma fusciscapa,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 66

Male Length 2.28 mm. Body black; antennae brownish-black, except the brown scape; except for coxae, legs generally brown; wings hyaline.

Head closely umbilicately punctate; eyes glabrous; scrobe shiny, margined, with the front ocellus at apex; ocellocular space about 2 times, interocellar space about 4 times and front ocellar space about 1.40 times the ocellar diameter; antennae inserted in the middle of face, with 10 segments : 1.1.1.5.2; scape short, abruptly reduced apically, about 3 times as long as thick; pedicel transverse, about 0.18 of scape; funicular segments constricted apically into stems and with long verticillate hairs; first funicular segment about 0.82 of scape and about 2 times as long as thick; second and third funicular segments subequal, slightly longer than the first; fourth funicular segment subequal to the first; fifth a little shorter; club sutures faint, subequal to the preceding 1.20 segments combined, first segment about 0.70 of the last funicular segment, second segment about 0.80 of the first.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 6 : 11 : 9; fore wing about 2 times as long as wide; veins *m : pm : st* ratio 100 : 67 : 54; vein *sm* with 16 setae, veins *m* and *pm* with 13 setae; hind coxae 1.60 times as long as thick; femora about 3.75 times as long as thick; tibiae subequal to femora, dorsally with a row of stiff bristles, spurs double, unequal, shorter spur about 0.60 of the longer, which latter is about 0.80 of metatarsus; tarsi about 0.80 of tibiae, metatarsus about 0.25 of tarsus.

Abdomen smooth; petiole matt, equal to coxae, about 0.43 of rest of abdomen; including petiole abdomen about 0.43 of body; viewed laterally length to height ratio 100 : 75; third tergite largest; aedeagus a little exserted.

Type locality : Nilambur

Prodecatoma mangicola Bhatnagar

1951 *Prodecatoma mangicola,* Bhatnagar, *Indian J. agr. Sci.,* 21 (2) : 156.

Male : Length 1.40 mm. Body generally black; antennae light testaceous-brown; tegulae light reddish-brown; legs, except the black coxae and brown hind femur, light testaceous-brown; wings hyaline; veins light brown.

Head viewed from above vertex narrow, extremely shallowly and closely punctate, interorbital space approximately 0.75 of the width of the head; ocelli almost in a slightly curved line; lateral ocelli very close to the eyes; ocellocular space equal to the ocellar diameter; ocelli very widely separated from each other; occiput very deeply concave in the middle, laterally flat, dull and finely rugosely striate; head viewed in front, clothed with moderately dense, long pubescence; oval; frons excavate, shallow in the middle; minutely and closely punctate; front ocellus just within the frontal impression; inner orbital border straight; face slightly convex, dull, finely and

closely rugosely punctate; gena 0.75 of the inner orbital length; mandibles tridentate, first tooth large, the teeth blunt; antennae inserted close together near the middle of the face; segments 9 : 1.1.4.3; scape slender, long and reaching beyond the front ocellus; slightly swollen before the middle below, 5 times as long as broad; pedicel nearly 0.50 of the first funicular segment, 2 times as long as broad; funicle deeply incised above and with long stems and 2 whorls of long setae above, segments subequal except the last, which is slightly shorter; the first funicular segment slightly more than 0.75 of the scape; club triarticulate, slightly less than the 2 preceding funicular segments, distinctly longer than the scape.

Thorax not wider than the head; pronotum closely, rugulosely punctate, dull, large, quadrate, wider than the mesonotum in the middle; mesonotum more coarsely punctate than the pronotum, dull; parapsidal furrows deep and complete; scutellum convex, more coarsely rugose; propodeum deeply declivous and with a faint median carina; lateral carinae near the margin complete; spiracles small, circular; hind coxae extremely finely and shallowly punctate; hind tibiae with 2 apical spurs, the longer 0.75 and the shorter less than 0.50 of the metatarsus; for wing 2 times as long as broad, with discal ciliation not dense; marginal fringe moderately long; vein *m* less than 0.50 of *sm*, 2 times the *st*; vein *pm* 0.67 of the *st*, not projecting beyond the level of the *st; st* very slender beyond base; *sm* distinctly broken distad with a few discal cilia.

Abdomen small, globose, slightly laterally compressed with a long petiole; petiole 2 times the hind coxa and slightly longer than the abdomen; the first tergite 2 times the second and equal to the third; abdominal tergites smooth and polished.

Type locality : Kanpur (U.P.)

Distribution : Kanpur (U.P.)

Host : Larval parasite of Cecidomyiid fly from spherical galls on leaf of mango.

Prodecatoma bhatiai Mani & Kaul

1974 *Prodecatoma bhatiai,* Mani & Kaul, *Mem. School Ent.,* 3 : 54.

Male : Length 3.50 mm. Body black; antennae almost totally black; coxae black; femora black except for the brownish-black tips, tibiae dark brown; tarsi brown; wings hyaline; veins brown.

Head viewed above width to length 100 : 57; ocellocular space a little more than one ocellar diameter; interocellar space nearly equal to 3 ocellar diameters; front ocellar space equal to ocellar diameter; vertex closely, shallowly, umbilicately punctate; head viewed from front width to length 100 : 70; front ocellus within the scrobe; orbit margined; face coarsely umbilicately punctate; head viewed laterally

height to thickness 100 : 70; gena smooth; genal carina faint; antennae inserted a little above the lower orbital border, with 10 segments : 1.1 1.5.2; scape about 5 times as long as thick; pedicel about 0.20 of scape; annellus minute; first funicular segment about 0.66 of scape; segments 2-3 almost equal to the first, only a little shorter; fourth segment somewhat more slender and fifth distinctly shorter; club about 0.75 of the 2 preceding segments combined; funicular segments typically with long verticillate setae.

Thorax slightly narrower than head; pronotum : scutum; scutellum ratio 20 : 100 : 135; pronotum closely punctate; mesonotum more closely umbilicately punctate; parapsidal furrows complete; scutellum about as long as wide, closely umbilicately punctate; propodeum about 2 times as wide as long; fore wing length to width 100 : 45; veins *sm* : *m* : *st* : *pm* ratio 625 : 100 : 100 : 135; hind femora about 3.50 times as long as thick; tibiae a little longer than femora; tibial spur about 0.33 of metatarsus; metatarsus about 0.54 of tibia; second tarsal segment about 0.40 of metatarsus; third segment about 0.66 of the second.

Abdomen smooth, a little less than 0.50 of body; petiole about 0.66 of abdomen.

Type locality Dehra Dun.

Prodecatoma postmarginalis Mukerjee

(Fig. 109)

1981 *Prodecatoma postmarginalis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 76.

Male : Length 3.24 mm. Body black; eyes and ocelli brown; scape brown; fore legs brown except for the black coxae and yellowish-brown femoral tip, base and tip of tibiae, spur and tarsus; middle and hind legs dark brown except for the black coxae, yellowish femoral tips, tibial base and tip, tibial spurs and tarsi; wings hyaline.

Head closely umbilicately punctate; densely hairy; eyes very finely and sparsely pubescent; ocellocular space 1.50 times, interocellar space 3 times and front ocellar space equal to the ocellar diameter; scrobe shiny; antennae inserted above the level of the lower orbital borders, with 10 segments : 1.1.1.5.2; scape uniformly slender, about 3.50 times as long as thick; pedicel subglobose; funicular segments with long verticillate hairs; first funicular segment about 0.65 of scape and 2.17 times as long as thick; second and third funicular segments subequal, very slightly longer than the first; fourth segment subequal to the first; fifth segment about 0.80 of the fourth; club subequal to the preceding 2.40 segments combined, with well marked sutures, first segment about 0.70 of the last funicular segment, second segment ovate, about 1 14 times the first.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 6 : 9 : 12; fore wing about 2 times as long as wide; veins *m* : *pm* : *st* ratio 100 : 140 : 80; vein *sm* with 23 setae, *m* and *pm* with a row of setae; hind coxae about 1.20 times as long as thick; femora about 3.70; tibiae slightly longer than femora, with a row of stiff bristles, spurs double, unequal, shorter spur about 0.66 of the longer spur, which latter is 0.66 of metatarsus; tarsus about 0.85 of tibiae, metatarsus about 0.33 of tarsus..

Petiole reticulate, a little longer than hind coxae and about 0.56 of the rest of abdomen; abdomen smooth, shiny, about 0.43 of body; viewed laterally length to height ratio 100 : 80; third tergite largest.

Type locality : Hogenakal.

Distribution : Hogenakal, Nilambur

Prodecatoma moozhiarensis Mukerjee

1981 *Prodecatoma moozhiarensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 71.

Male : Length 3.81 mm. Body black; eyes and ocelli reddish-brown; scape basally brownish-black; tips of femora, bases and tips of tibiae and spurs brown; wings hyaline.

Head closely umbilicately punctate; densely hairy; eyes glabrous; scrobe deep, smooth, with the front ocellus at apex; ocellocular space 2.10 times, interocellar space 4.35 times and front ocellar space about 1.40 times the ocellar diameter; antennae inserted above the level of lower orbital borders, with 10 segments : 1.1.1.5.2; scape short, thicker basally than apically, about 3.33 times as long as thick; pedicel about 0.12 of scape, transverse; funicular segments constricted apically into stems and with long verticillate hairs; first funicular segment about 0.70 of scape and 2.50 times as long as thick; second segment about 1.14 times the first; third segment subequal to the second segment; fourth segment a little longer; fifth segment about 0.86 of the fourth segment; first club segment about 0.83 of the last funicular segment, second segment elongate-ovate, slightly shorter

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 6 : 11 : 9; fore wing length to width ratio 100 : 45; veins *m* : *pm* : *st* ratio 100 : 80 : 50; veins *sm, m* and *pm* with a row of short setae; hind coxae 1.50 times as long as thick; femora about 3.80 times as long as thick; tibiae subequal, spurs double, shorter spur about 0.50 of the longer spur, which latter is about 0.60 of metatarsus; tarsus a little shorter than tibiae, metatarsus about 0.33 of tibiae.

Abdomen smooth, viewed laterally length to height 100 : 58; about 0.50 of body; petiole closely punctate, nearly 2 times hind coxae; third tergite largest.

Type locality : Moozhiar-Tekkady Road (Cardamom Hills)

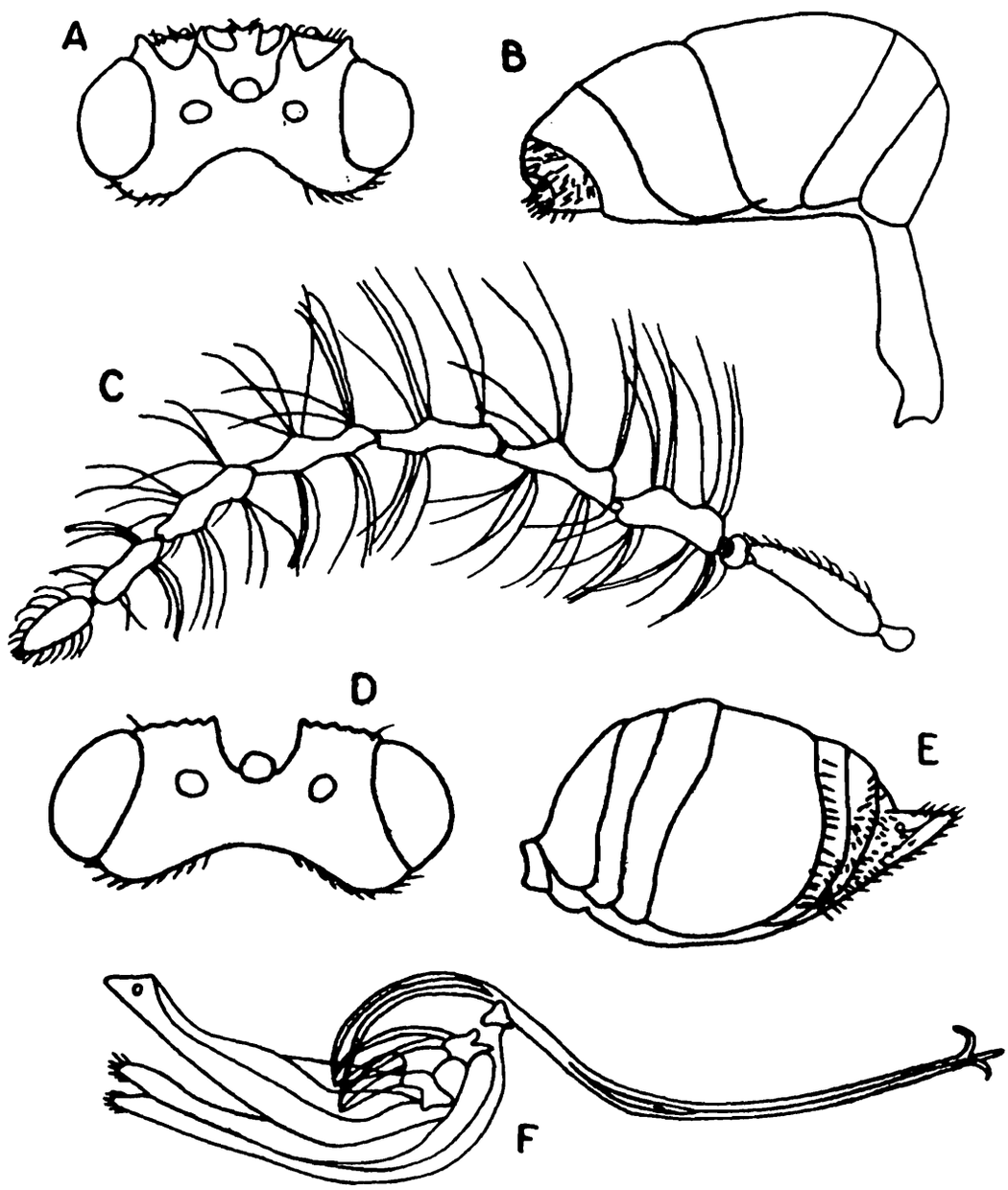

FIG. 110. A-C. *Prodecatoma moozhiarensis* Mukerjee, male; A. Head in dorsal view; B. Abdomen; C. Antenna; D-F. *Prodectoma nilamburensis* Mukerjee, female; D. Head in dorsal view; E. Abdomen; F. Genitalia.

Prodecatoma nilamburensis Mukerjee

(Fig. 110)

1981 *Prodecatoma nilamburensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 73.

Female : Length 3.28 mm. Body black; eyes and ocelli brownish-black; antennae brownish-black, except for the dark brown club, black scape and pedicel; coxae black; legs brown except for femoral tips which are paler; wings hyaline.

Head closely umbilicately punctate; gena and face longitudinally striate; eyes glabrous; scrobes deep, shiny, with the front ocellus at apex; ocellocular space about 1.25 times, interocellar space about 4 times and front ocellar space subequal to the ocellar diameter; antennae inserted a little above the level of lower orbital borders, with 10 segments : 1.1.1.5.2; scape long, slender, about 4.75 times as long as thick; pedicel about 0.20 of scape; first funicular segment longest, about 1.40 times as long as thick; funicular segments 2-5 subequal and a little shorter than the first; club subequal to the preceding 2.15 segments combined, first segment about 0.75 of the last funicular segment, second conically pointed and about 2 times the first.

Thorax closely umbilicately punctate; parapsidal furrows complete; propodeum with a faint longitudinal carina on either side of the median longitudinal line; pronotum : mesonotum : scutellum ratio 6 : 9 : 9; fore wing about 2 times as long as wide; veins *m* : *pm* : *st* ratio 100 : 100 : 75; vein *sm* with 12 setae; *m* with 8 and *pm* with 8 setae; hind wing about 3.50 times as long as wide; hind coxae about 1.30 times as long as thick; femora about 1.80 times coxae; tibiae about 1.12 times femora, spurs double, unequal, shorter spur about 0.45 of the longer spur, which latter is 0.80 of metatarus; tarsus about 0.75 of the tibiae, metatarsus about 0.30 of tarsus.

Petiole short and transverse; abdomen smooth, shiny, about 0.50 of body; viewed laterally length to height ratio 100 : 62; fourth tergite longest, tergites 5-6 subequal; ovipositor slightly protruding.

Type locality : Nilambur

Prodecatoma sabiae Mani

1969 *Prodecatoma sabiae,* Mani, *Orient. Ins.*, 3 (4) : 315.

Female : Length 2.00 mm. Body black; antennae brownish-black; scape pale yellowish-brown, but obscurely darkened below in the middle; shoulder and propleura honey-yellow; legs brown; fore and middle coxae dark brown except for the pale tip; hind coxae black except for the extreme tip; fore and middle femora obscurely darkened in the middle anteriorly; hind femora dark brown in the apical 0.50.

Head wider than thorax, with shallow, close, umbilicate punctae; gena distinctly margined, a little shorter than eye; scrobe deep, with the front ocellus at its apex; ocellocular space less than the interocellar space; antennae inserted a little below the lower orbital border, about 0.25 of body, slender, weakly thickened apically, with 11 segments : 1.1.1.5.3; scape slender, a little less than 0.50 of flagellum, somewhat gradually reduced apically; pedicel about 0.33 of scape and a little more than 2 times as long as thick; first funicular segment a little shorter than pedicel; second funicular

segment a little shorter than first; segments 3-5 subequal and a little shorter than the first; club a litle shorter than scape and about 2 times pedicel; first and second club segments subequal and each equal to the fifth funicular segment; third club segment about 0.33 times shorter than the second, obtusely conical.

Thorax with close, shallow umbilicate punctae; parapsidal furrows complete; mesonotum without a smooth area; fore wing a little more than 2 times as long as wide; vein *m* short, stout, subequal to *st*; vein *pm* much shorter than *st*; hind femora distinctly incrassate in the middle, slightly more than 3 times as long as thick, elongate-fusiform; hind tibiae a little shorter than femora; hind tarsi equal to tibiae and somewhat longer than femora; tibial spur about 0.66 of metatarsus and subequal to the second tarsal segment; hind tarsal segment ratio 3 : 2 : 1.5 : 1 : 2.

Petiole equal to propodeum and slightly more than 0.25 of abdomen; abdomen compressed and rounded in profile, with the height equal to length.

Type locality : Dalhousie 2400 m above mean sea-level

Host : Acroëctasis campanulata Mani, making gall No. 500 on *Sabia campanulata* Wall.

Prodecatoma beesoni Mani & Kaul

1974 *Prodecatoma beesoni,* Mani & Kaul, *Mem. School Ent.,* 3 : 52.

Female : Length 3.40 mm. Body brown; head and thorax black above; antennae dark brown; legs yellowish-brown, hind coxae dark brown above in apical 0.70; wings hyaline, veins brown, with dark infuscation; petiole black; tergites margined black; tergites 5-6 black.

Head viewed above width to length 100 : 40; ocellocular space nearly equal to an ocellar diameter; interocellar space a little more than 3 times ocelloculr space; front ocellar space slightly more than an ocellar diameter; vertex closely umbilicately punctate; head viewed in front width to length 100 : 90; face minutely punctate; front ocellus within scrobe; head viewed laterally height to thickness 100 : 50; gena subequal to eye, with well developed genal carina; antennae inserted on the lower orbital border, with 11 segments : 1.1.1.5.3; scape about 4 times as long as thick; pedicel about 0.33 of scape; annellus narrow; first funicular segment longest and about 0.60 of scape; other funicular segments subequal; club a little less than the 2 preceding segments combined.

Thorax a little narrower than head; pronotum : scutum : scutellum ratio 80 : 100 : 105; pronotum wide, closely umbilicately punctate; mesonotum closely umbilicately punctate, with well developed parapsidal furrows; scutellum almost as wide as long; propodeum coarsely punctate; fore wing almost 2.50 times as long

as wide; veins *sm* : *m* : *st* : *pm* ratio 636 : 100 : 110 : 110; vein *m* as long as thick; hind femora stout, about 3 times as long as thick; tibiae a little longer than femora; tibial spur about 0.33 of metatarsus; tarsus about 0.70 of tibiae; metatarsus about 0.66 of tarsus; abdomen smooth, shiny, strongly compressed, with petiole about 0.20 of abdomen; abdomen viewed laterally height to length 64 : 100.

Type locality : Dehra Dun

Host : Unknown insect attacking *Shorea robusta*

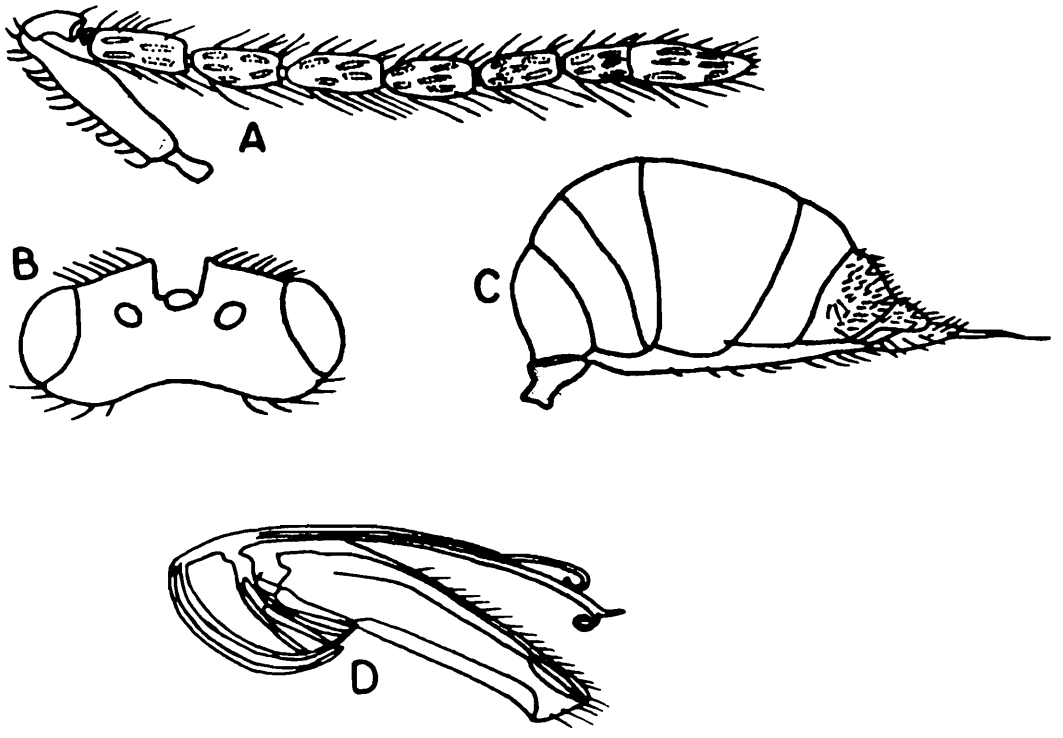

FIG. 111. *Prodecatoma ahlaensis* Mukerjee, female : A. Antenna; B. Head in dorsal view; C. Abdomen; D. Genitalia.

Prodecatoma ahlaensis Mukerjee

(Fig. 111)

1981 *Prodecatoma ahlaensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 59

Female : Length 3.50 mm. Body black; eyes and ocelli brown; antennae dark brown; coxae black otherwise legs brown; wings hyaline.

Head closely umbilicately punctate; eyes finely and sparsely pubescent; scrobe shiny, with the front ocellus within its apex; ocellocular space about 1.40 times, interocellar space 2 times and front ocellar space about 0.60 of the ocellar diameter; antennae inserted on level of the lower orbital border, with 10 segments : 1.1.1.5.2; scape slender, abruptly reduced subapically, about 3.60

times as long as thick; pedicel about 0.27 of scape; first funicular segment longest, about 2 times pedicel and 2.63 times as long as thick; second and third funicular segments subequal and each about 0.90 of the first; fourth segment a little shorter; fifth about 0.90 of the first; first club segment about 0.87 of the fifth funicular segment; second segment about 1.78 times the first, gradually reduced apically to an obtuse point.

Thorax with umbilicate punctae, separated by a little less than own diameter; propodeum more densely hairy than rest of thorax; parapsidal furrows well developed; pronotum : mesonotum : scutellum ratio 6 : 10 : 11; fore wing length to width ratio 100 : 45; veins *m* : *pm* : *st* ratio 100 : 100 : 64; vein *sm* with 19 setae, *m* with 9 setae; hind wing about 4 times as long as wide; hind coxae 1.84 times as long as thick; femora about 1.66 times coxae; tibiae 1.35 times femora, with a row of stiff bristles above, spurs double, unequal, shorter spur about 0.45 of the longer, which latter is about 0.50 of metatarsus; tarsi about 0.87 of tibiae; metatarsus about 0.30 of tarsus.

Petiole short, abdomen smooth, shiny, almost 0.50 of body; viewed laterally length to height ratio 100 : 57; fourth tergite largest; ovipositor long exserted.

Type locality : Ahla Catchment Area : Dalhousie.

Phylloxeroxenus Ashmead

1888 *Phylloxeroxenus,* Ashmead, *Ent. Amer.*, 2 : 42.
1894 *Phylloxeroxenus,* Ashmead, *Trans. Amer. ent. Soc.*, 21 : 328.
1904 *Phylloxeroxenus,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 262, 263.
1909 *Phylloxeroxenus,* Schmiedeknecht, *Gen. Ins.*, 97 : 139.
1979 *Phylloxeroxenus,* Krombein *et al.*, Hymen. N. America, 1 : 848.

Hind tibiae with a single spur; funicular segments ovate, moniliform; eyes broadly oval; thorax with large, coarse punctae; parapsidal furrows complete; fore wings with veins *m* and *pm* longer than *st*.

Type-species : Phylloxeroxenus phylloxerae Ashmead

KEY TO SPECIES

1. Veins *pm* and *m* subequal	2
Veins *pm* and *m* not subequal	3
2. Head uniformly umbilicately punctate; ocellocular space about 1.80 times the ocellar diameter	*Phylloxeroxenus rajaensis* Mukerjee
Head longitudinally striate below the antennal sockets, otherwise umbilicately punctate; ocellocular space about 1.20 times the ocellar diameter	*Phylloxeroxenus poroensis* Mukerjee

3. Head uniformly umbilicately punctate; veins *pm* and *st* subequal	*Phylloxeroxenus godiarensis* Mukerjee
Head longitudinally striae below the antennal sockets; vein *pm* nearly 2 times as long as *st*	*Phylloxeroxenus pechipariensis* Mukerjee

Phylloxeroxenus rajaensis Mukerjee

(Fig. 112)

1981 *Phylloxeroxenus rajaensis,* Mekerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 57.

Male : Length 3.30 mm. Body black; eyes and ocelli reddish-brown; except for the brownish-black pedicel and brown scape, which is black apically, rest of antennae black; fore, middle and hind legs brown, except for black coxae and yellowish tips of tibiae, white spurs and tarsi; wings hyaline.

Head closely umbilicately punctate; eyes very finely and sparsely pubescent; ocellocular space about 1.80 times, interocellar space about 2.70 times and front ocellar space abot 0.90 of the ocellar diameter; scrobe deep, smooth, shiny; antennae inserted above the level of lower orbital borders, with 10 segments : 1.1.1.5.2; scape subcylindrical, slightly reduced apically, about 3.40 times as long as thick; pedicel subglobose; funicular segments constricted and with long verticillate hairs; funicular segments 1-4 subequal, gradually becoming more slender; the first segment about 0.70 of scape and 2.18 times as long as thick; fifth segment about 0.84 of the fourth segment; club subequal to the preceding 1.60 segments combined, first segment about 0.80 of the last funicular segment, second segment a little longer

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 11 : 14 : 19; fore wing about 2 times as long as wide; veins *m* : *pm* : *st* ratio 100 : 92 : 67; vein *sm* with 15 setae; hind coxae 1.30 times as long as thick; femora about 3.63 times as long as thick; tibiae slender, cylindrical, dorsally with 8 stiff bristles, subequal to femora; spurs double, shorter spur about 0.60 of the longer, which latter is about 0.70 of metatarsus; tarsus about 0.87 of tibiae; metatarsus about 0.30 of tarsus.

Abdomen about 0.54 of body; petiole rugose; tergites smooth, shiny, viewed laterally length to height 100 : 60; petiole about 0.33 of rest of abdomen; sixth tergite with some scattered setigerous punctae.

Type locality : North Bengal : Raja-Bhat-Khawa.

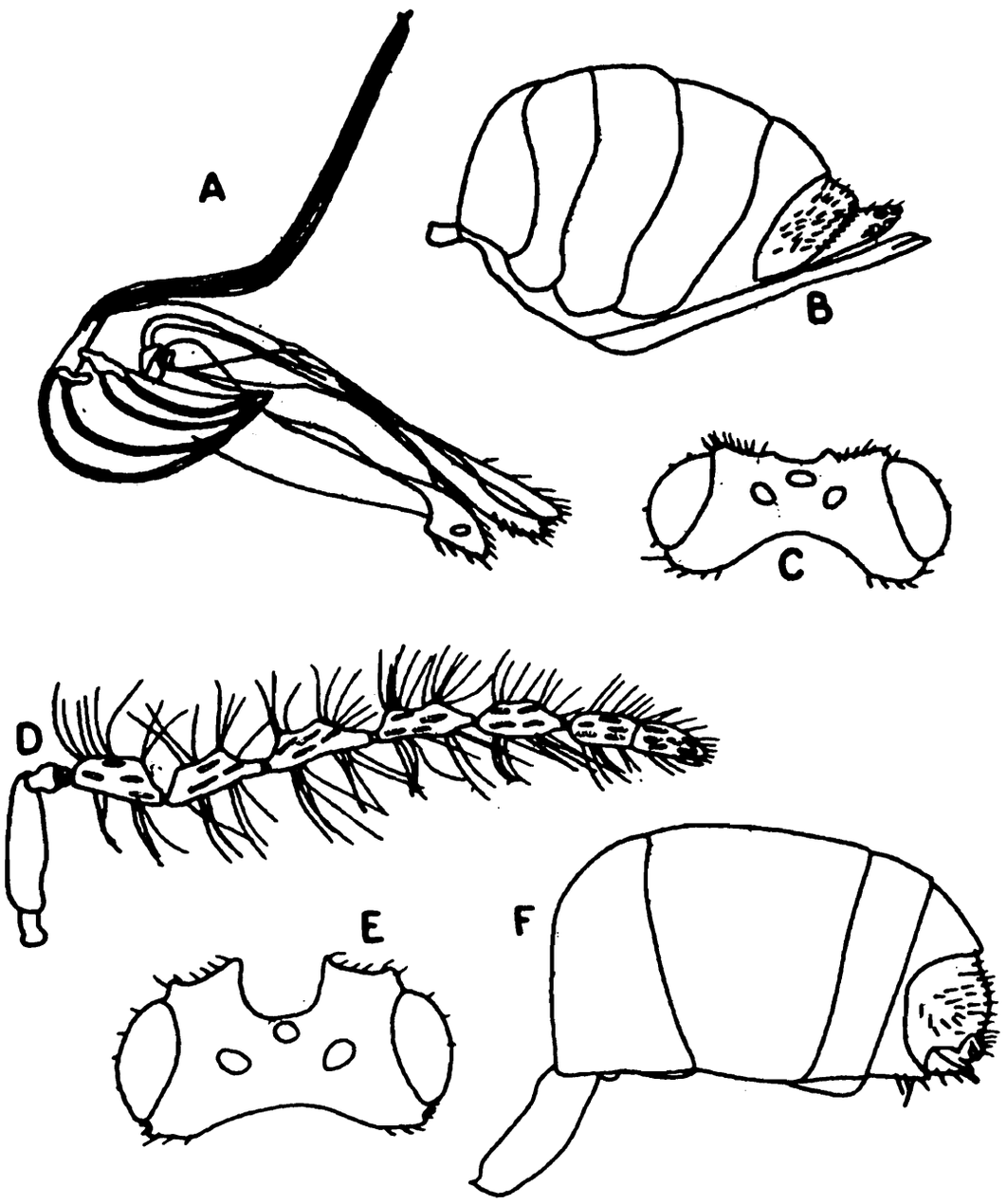

FIG. 112. A-C. *Phylloxeroxenus poroensis* Mukerjee, female : A. Genitalia; B. Abdomen; C. Head in dorsal view; D-F. *Phylloxeroxenus rajaensis* Mukerjee, male; D. Antenna; E. Head in dorsal view; F. Abdomen.

Phylloxeroxenus poroensis Mukerjee

(Fig. 112)

1981 *Phylloxeroxenus poroensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 54.

Female : Length 3.40 mm. Body black; eyes and ocelli reddish-brown; except for the black scape and blackish-brown pedicel, rest of antennae dark brown; tips of femora reddish-brown; tibial spurs, tips and tarsi pale brown; wings hyaline.

Head closely umbilicately punctate; clypeus and gena longitudinally striate; eyes finely and sparsely pubescent; scrobe shallow, dull, with front ocellus outside; ocellocular space about 1.20 times, interocellar space about 3 times and front ocellar space 0.80 of the ocellar diameter; antennae inserted above the level of lower orbital borders with 11 segments : 1.1.1.5.3; scape gradually reduced apically, about 4 times as long as thick; pedicel subglobose; first funicular segment longest, about 1.75 times as long as thick; second; segment about 0.93 of the first; segments 3-4 subequal to the second segment; fifth segment about 0.80 of the fourth; club subequal to the preceding 2.18 segments combined, sutures obscure showing 3 segments.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 8 : 15 : 15; fore wing length to width ratio 100 : 47; veins *m* : *pm* : *st* ratio 100 : 108 : 70; vein *sm* with 14 setae; veins *m* and *pm* with 15 setae; hind coxae about 1.28 times as long as thick; femora more than 2 times coxae, and about 4.22 times as long as thick; tibiae slender, cylindrical, subequal to femora, about 7 times as long as thick; tibial spur single, about 0.50 of metatarsus; tarsus subequal to tibiae; metatarsus about 0.33 of tarsus.

Abdomen smooth, shiny; viewed laterally length to height 100 : 70; petiole short, about 1.50 times as long as thick; tergites 3 and 4 subequal; except for sixth tergite matt with setigerous punctae; ovipositor exserted slightly.

Type locality : North Bengal : Poro North

Phylloxeroxenus godiarensis Mukerjee

(Fig. 113)

1981 *Phylloxeroxenus godiarensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. pap.) 25 : 50.

Male : Length 2.06 mm. Body black; eyes and ocelli dark brown; mandibles reddish-brown; except the black scape, rest of antenna very dark brown; coxae concolorous with body; rest of legs generally brownish-black; tarsi yellowish-brown; spurs yellow; wings hyaline; aedeagus brownish-yellow.

Head closely umbilicately punctate; scrobe smooth, shiny, with the front ocellus outside; viewed above distinctly wider than thorax; ocellocular space 1.50 times, interocellar space 3.40 times and front ocellar space 1.12 times the ocellar diameter; antennae inserted well above level of lower orbital borders, with 10 segments : 1.1.1.5.2; scape abruptly reduced apically, about 3.21 times as long as thick; pedicel about 0.33 of scape; funicular segments with short stems and with long verticillate hairs; funicular segments 1-4 subequal, about

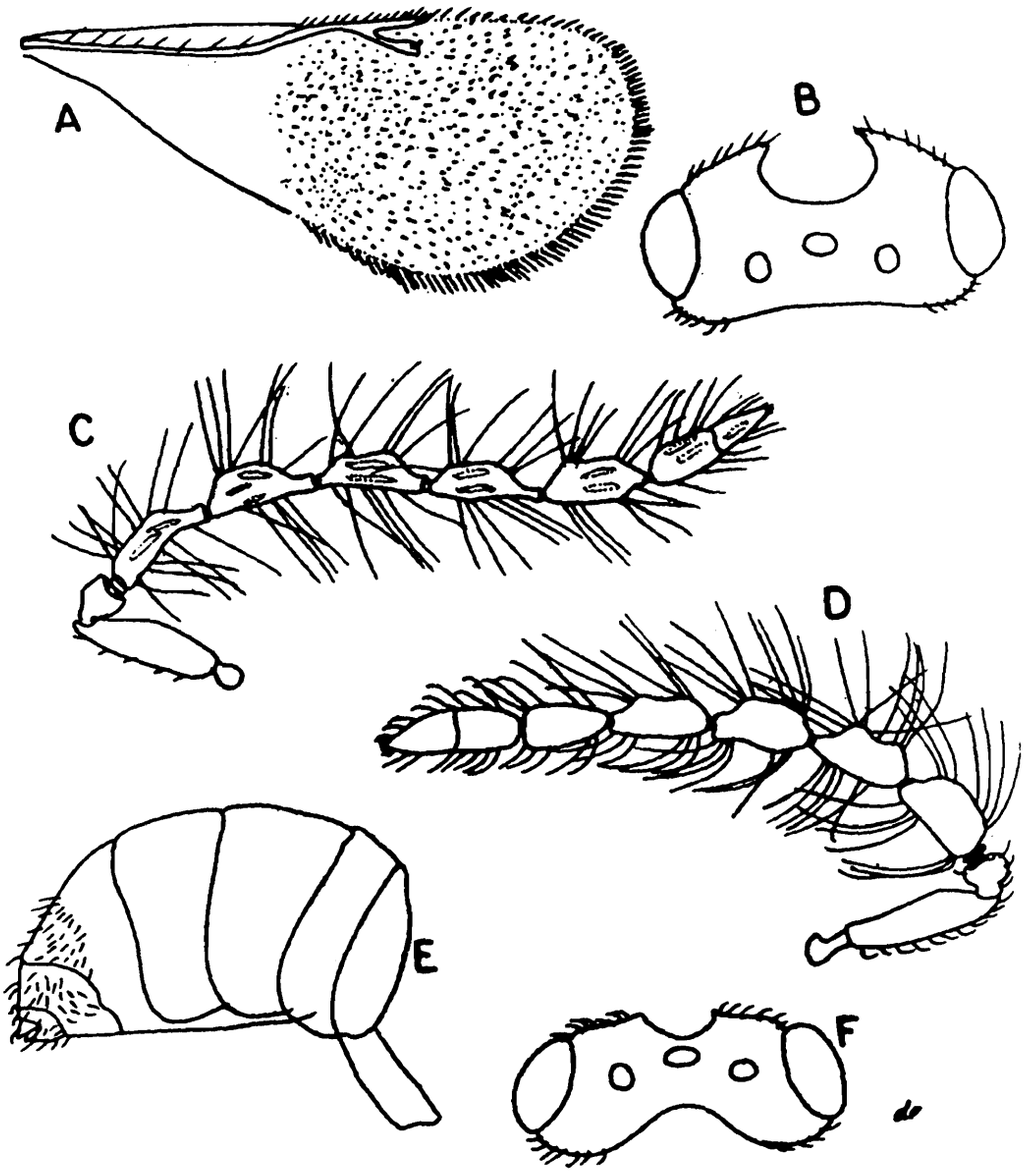

FIG. 113. A-C. *Phylloxeroxenus godiarensis* Mukerjee, male : A. Fore wing; B. Head in dorsal view; C. Antenna; D-F. *Phylloxeroxenus pechipariensis* Mukerjee, male : D. Antenna; E. Abdomen; F. Head in dorsal view.

0.83 of scape and about 3.26 times as long as thick; fifth segment a little shorter; club subequal to the preceding 1.25 segments combined, first club segment about 0.73 of the last funicular segment, second segment conical, with a stout prolongation apically.

Thorax shallowly umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 1 : 2 : 2; fore wings length to width ratio 100 : 42; veins *m* : *pm* : *st* ratio 100 : 67 : 61; vein *sm* with 11 setae, *m* and *pm* with 10 setae; hind coxae about 1.43 times as long as thick; femora about 3 times as long as thick; tibia slightly thickened apically, about 1.17 times femora, with 2 stiff bristles above, spur single and about 0.60 of metatarsus; tarsus subequal to tibiae, metatarsus about 0.25 of tarsus.

Abdomen smooth; petiole closely punctate; viewed laterally length to height ratio 100 : 49; petiole a little longer than hind coxae and about 2 times as long as thick; third tergite longest; sixth tergite with a few scattered setae; aedeagus about 0.40 of abdomen.

Type locality : Pechiparai

Phylloxeroxenus pechiparienis Mukerjee

(Fig. 113)

1981 *Phylloxeroxenus pechipariensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 52.

Male : Length 2.84 mm. Body black; eyes and ocelli brown; mandibles reddish-brown; basal part of scape yellowish-brown, otherwise antennae black; fore leg very dark brown; middle and hind legs dark brown, except for the yellowish-brown femoral tips and base and tips of tibiae and tarsi; wings hyaline.

Head closely umbilicately punctate, face below antennal sockets and gena longitudinally striate; eyes glabrous; mandibles bidentate; scrobe shiny, with the front ocellus outside; viewed above slightly wider than thorax; ocellocular space about 1.35 times, interocellar space about 3.10 times and front ocellar space subequal to ocellar diameter; antennae inserted above the level of lower orbital borders, with 10 segments : 1.1.1.5.2; scape slightly thickened subapically, about 3.42 times as long as thick; pedicel about 0.27 of scape, subglobose; funicular segments with verticillate hairs, 1-4 subequal and each about 2 times as long as thick; fifth segment about 0.87 of the fourth segment; club subequal to the preceding 1.52 segments combined, with segmentation distinct, first segment about 0.78 of the last funicular segment, second subequal to the first, obtusely pointed.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 6 : 10 : 14; fore wing length to width ratio 100 : 48; veins *m* : *pm* : *st* ratio 100 : 150 : 80; *sm* long with 13 setae, veins *m* and *pm* with a row of short setae; hind coxae about 1.20 times as long as thick; femora about 4.30 times as long as thick; tibiae a little longer than femora, with 3 stout bristles dorsally; tibial spur single, about 0.60 of metatarsus; tarsus subequal to tibiae; metatarsus about 0.33 of tarsus; abdomen smooth, shiny; petiole finely punctate, about 0.33 of abdomen, including petiole abdomen about 0.45 of body; viewed laterally length to height ratio 100 : 65; third tergite longest; fifth and sixth tergites apically with close setigerous punctae.

Type locality : Pechiparai

Eurytomacharis Ashmead

1888 *Eyrytomacharis,* Ashmead, *Ent. Amer.,* 4 : 42.
1894 *Eurytomacharis,* Ashmead, *Trans. Amer. ent. Soc.,* 21 : 327.
1904 *Eurytomacharis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 262, 263.
1909 *Eurytomacharis,* Schmiedeknecht, *Gen. Ins.,* 97 : 139.
1956 *Eurytomacharis,* Bugbee, *Ann. ent. Soc. Amer.,* 49 : 505.
1966 *Eurytomacharis,* Bugbee, *Amer. Midland Nat.,* 75 (2) : 367-382.
1979 *Eurytomacharis,* Krombein *et al.,* Hymen. N. America, 1 : 848.

Body black; dark reddish or yellowish-brown.

Head umbilicately punctate, scrobe shallow, usually carinate laterally; antennae clavate; funicular segments moniliform; first funicular segment short; club stout, with 3 segments; face convex; occiput margined; thorax with large shallow punctae; parapsidal furrows complete; fore wing with vein *m* slightly longer than *pm* and *st*; vein *pm* not much longer; fifth tergite 2-3 times longer than wide; abdomen equal to or longer than thorax, elongate or oval, tergite 6 longer than 4 and 5 combined.

Type species : Euratomacharis minuta Ashmead

KEY TO SPECIES

1. Vein *pm* not longer than *st*, but generally shorter or at the most subequal	5
Vein *pm* distinctly longer than *st*	2
2. Vein *pm* only slightly longer than *st*	4
Vein *pm* very much longer than *st*	3
3. Ocellocular space distinctly 2 times ocellar diameter	*Eurytomacharis sayadriensis* Mukerjee
Ocellocular space hardly 1.80 times the ocellar diameter	*Eurytomacharis coromandelicus* Mukerjee
4. Funicular segments with slender stems; second and third tergites subequal	*Eurytomacharis nilamburensis* Mukerjee
Funicular segments with stout stems; third tergite the largest	*Eurytomacharis dubeyi* Mukerjee
5. Hind tibial spur distinctly longer than metatarsus; ocellocular space equal to the ocellar diameter	*Eurytomacharis keralanesis* Mukerjee
Hind tibial spur shorter than metatarsus; ocellocular space 1.55 times the ocellar diameter	*Eurytomachatis pechiparaiensis* Mukerjee

Eurytomacharis sayadriensis Mukerjee

(Fig. 114)

1981 *Eurytomacharis sayadriensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 41.

Female : Length 4.50 mm. Body yellowish-brown to reddish-brown, with black on thorax and abdomen; ocellar area almost black; except for the yellow scape, antennae dark brown; thorax yellowish-brown, sometimes black on parts of pronotum to scutellum; legs yellowish-brown; wings hyaline; abdomen brown, hind margins of tergites black.

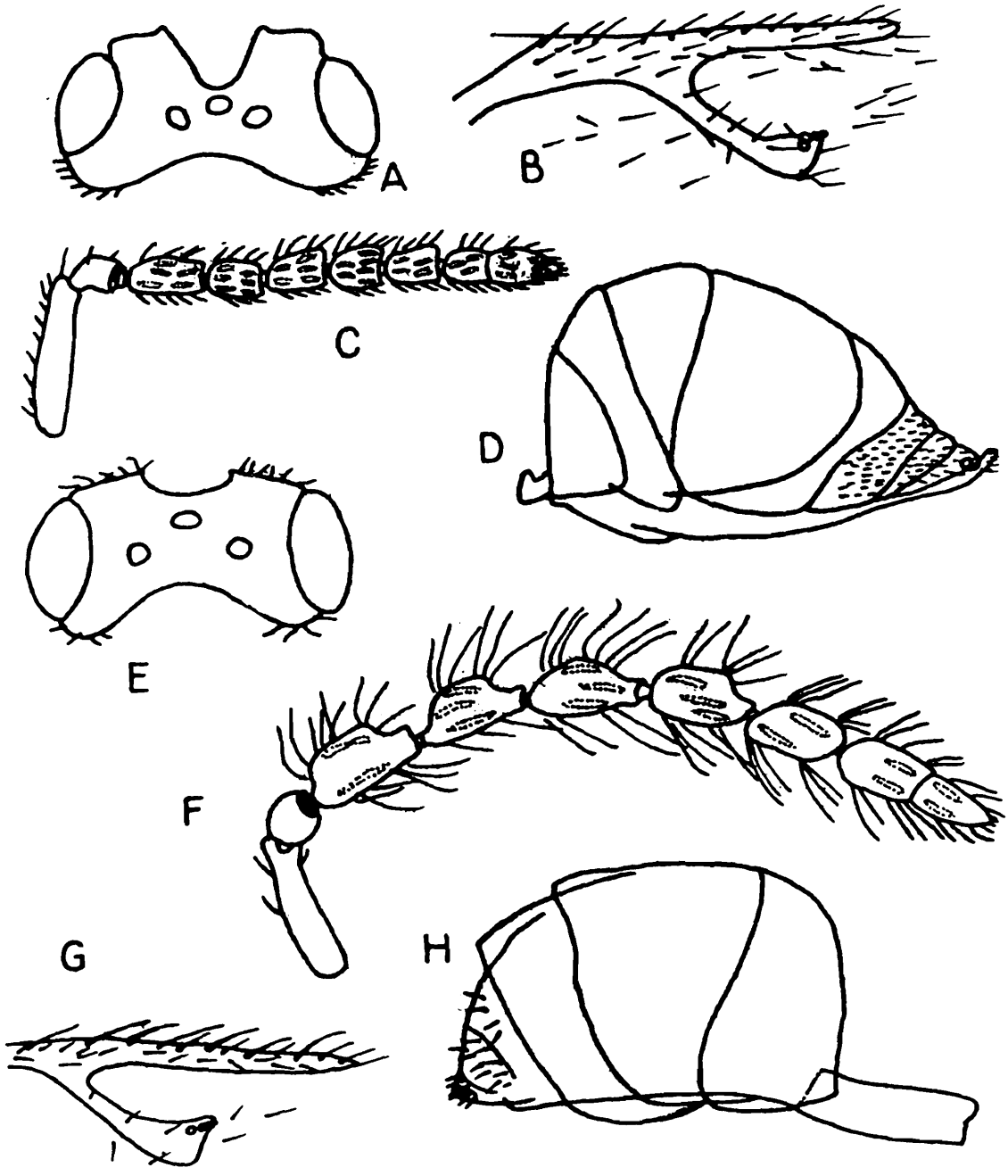

FIG. 114. A-D. *Eurytomacharis sayadriensis* Mukerjee, female; A. Head in front view; B. Stigmal area of fore wing; C. Antenna; D. Abdomen; E-H. *Eurytomacharis coromandelicus* Mukerjee, male : E. Head in front view; F. Antenna; G. Stigmal area of fore wing; H. Abdomen.

Head closely umbilicately punctate, clypeus and gena longitudinally striate; scrobe deep, smooth; viewed above a litle wider than thorax; ocellocular space abot 2.60 times, interocellar space about 2 times and front ocellar space about 0.45 of the ocellar

diameter; antennae inserted a little above the level of the lower orbital borders, with 10 segments : 1.1.1.5.2; scape slender, cylindrical, about 4 times as long as thick; pedicel about 0.25 of scape; first funicular segment longest, about 0.47 of scape and about 2 times as long as thick; second segment about 0.77 of the first; funicular segments 3-5 subequal to the second; club about 3.30 times as long as thick and equal to 2.19 of the preceding segments combined, first segment about 0.78 of the preceding segment, second segment about 1.82 of the first.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 12 : 25 : 21; fore wing length to width ratio 100 : 43; veins *m* : *pm* : *st* ratio 100 : 118 : 82; vein *sm* with 16 setae, *m* and *pm* with a series of setae; hind coxae about 1.13 times as long as thick; femora about 3.13 times longer than thick; tibiae slender, with 6 stiff setae above and about 1.10 times femora; spurs double, unequal, shorter spur about 0.66 of the longer, which latter is 0.66 of the metatarsus; tarsus about 0.73 of tibiae; metatarsus about 0.30 of tarsus.

Abdomen minutely punctate, about 0.60 of body; viewed laterally length to height ratio 100 : 68; petiole almost as long as thick; fourth tergite longest, sixth tergite with dense setigerous punctae; ovipositor slightly exserted.

Type locality : Khandla Ghat : Poona - Bombay Road

Distribution : Dalhousie; Western Ghats (North)

Eurytomacharis coromandelicus Mukerjee

(Fig. 114)

1981 *Eurytomacharis coromandelicus,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 29.

Male : Length 1.50 mm. Body black; eyes and ocelli reddish-brown; antennae dark brown; fore legs dark brown but for the yellowish-brown spur and tarsus; middle and hind legs dark brown except for the somewhat paler brown spurs and tarsus; wings hyaline.

Head closely umbilicately punctate on the vertex; gena and face longitudinally striate; eyes glabrous; scrobes moderately deep and smooth, with the front ocelli outside; viewed above distinctly wider than thorax; ocellocular space 1.80 times, interocellar space 3.50 times and front ocellar space 1.20 times the ocellar diameter; antennae inserted in the middle of face, with 10 segments : 1.1.1.5.2; scape slightly reduced apically, about 4 times as long as thick; pedicel subglobose; funicular segments with short, stout stems apically and with long verticillate hairs; first funicular segment longest, about 0.75 of scape and 2.14 times as long as thick; second segment about 0.90 of the first; segments 3-4 subequal to the second; fifth segment

about 0.80 of the second; club subequal to the preceding 1.75 segments combined, first segment subequal to the last funicular segment, second subequal to the first.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 8 : 15 : 16; fore wing about 2 times as long as wide; veins *m* : *pm* : *st* ratio 10 : 16 : 9; vein *sm* with 11 setae, veins *m* and *pm* with 11 setae; hind coxae about 1.45 times longer than thick; femora about 4 times as long as thick; tibiae about 1.12 times femora, slightly thickened apically and with 2 stiff bristles above, spurs double, unequal, the shorter spur about 0.60 of the longer, which latter is 0.66 of metatarsus; tarsus subequal to tibiae, metatarsus about 0.33 of tarsus.

Abdomen smooth, petiole matt, more than 2 times as long as hind coxae and about 0.43 of the rest of abdomen; second tergite largest; viewed laterally length of abdomen to height ratio 100 : 70.

Type locality : Tanjore

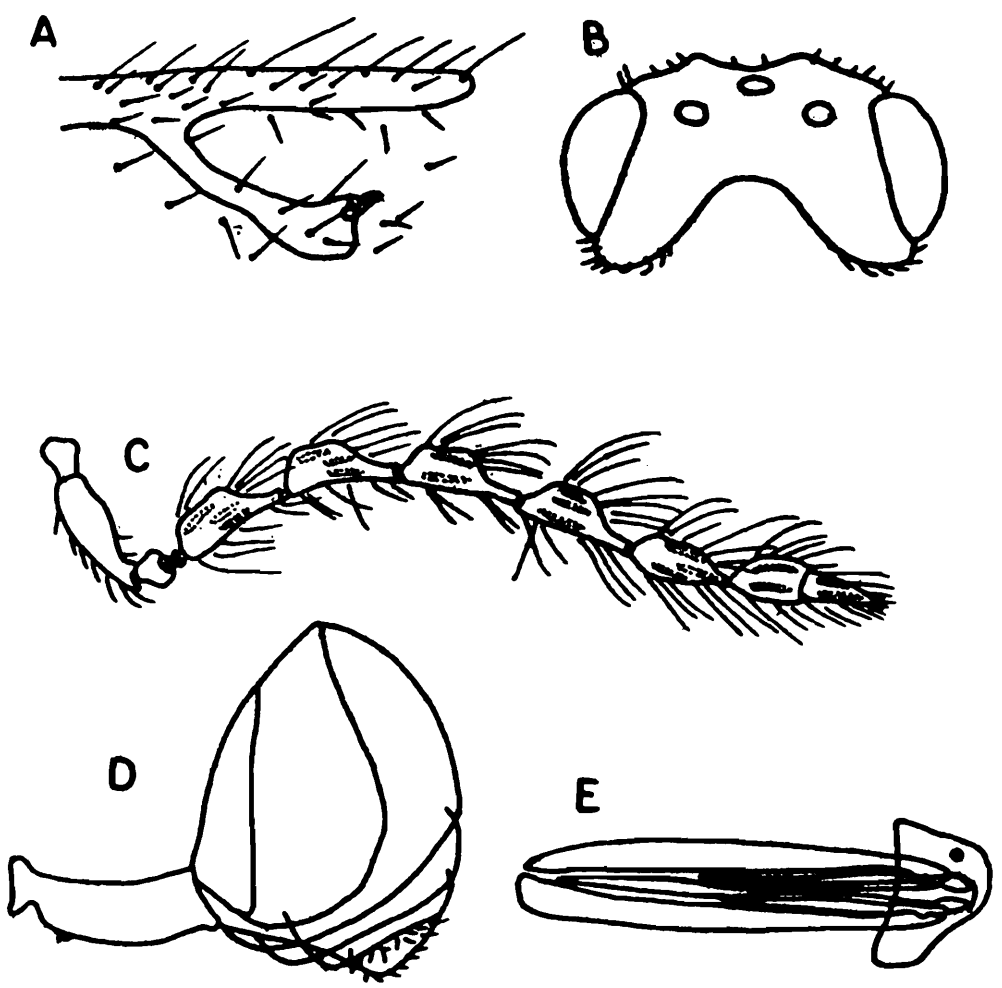

FIG. 115. *Eurytomacharis nilamburensis* Mukejee, male : A. Stigmal area of fore wing; B. Head in dorsal view; C. Antenna; D. Abdomen; E. Genitalia.

Eurytomacharis nilamburensis Mukerjee

(Fig. 115)

1981 *Eurytomacharis nilamburensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 36.

Male : Length 1.75 mm. Body black; eyes and ocelli brown; mandibles dark brown; antennae brownish-black except for the black scape; fore legs brownish-black except for the darker coxae and femora; middle darker, with black coxae; fore wing obscurely infuscate brown basally; hind wings pale brown.

Head closely umbilicately punctate; gena and clypeus longitudinally striate; eyes glabrous; viewed above distinctly wider than thorax; ocellocular space about 1.66 times, interocellar space about 3.33 times and front ocellar space subequal to ocellar diameter; scrobe shallow, dull; antennae inserted high above the level of lower orbital borders, with 10 segments : 1.1.1.5.2; scape conspicuously reduced apically, about 3 times as long as thick; pedicel subglobose; funicular segments nodose, with long stems and with verticillate setae; first funicular segment longest, about 3.50 times as long as pedicel and about 2.62 times as long as thick; funicular segments 2-4 subequal and about 0.95 of the first segment; fifth segment a little shorter than the fourth; club subequal to the preceding 1.40 segments combined, first segment about 0.77 of the preceding funicular segment, second segment subequal to the first and conical.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 9 : 11 : 11; fore wing about 2 times as long as wide; veins *m* : *pm* : *st* ratio 100 : 89 : 67; *sm* with 11 setae, *m* and *pm* each with 6 setae; hind wing about 4 times as long as wide; hind coxae about 1.55 times longer than thick; femora a little less than 2 times coxa; tibiae about 1.11 times femora, with double unequal spurs, shorter spur about 0.50 of the longer spur, which latter is about 0.44 of metatarsus; tarsus about 0.83 of tibiae, metatarsus about 0.36 of tarsus.

Abdomen short, smooth, about 0.52 of body; petiole long, about 2 times hind coxae and 3 times as long as thick; as a whole abdomen about 0.80 of body; viewed laterally length to height 80 : 100; tergites 2 and 3 subequal.

Type locality : Nilambur

Eurytomachairs dubeyi Mukerjee

(Fig. 116)

1981 *Eurytomacharis dubeyi,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 31.

Male : Length 2.42 mm. Body brownish-black to black; wings hyaline.

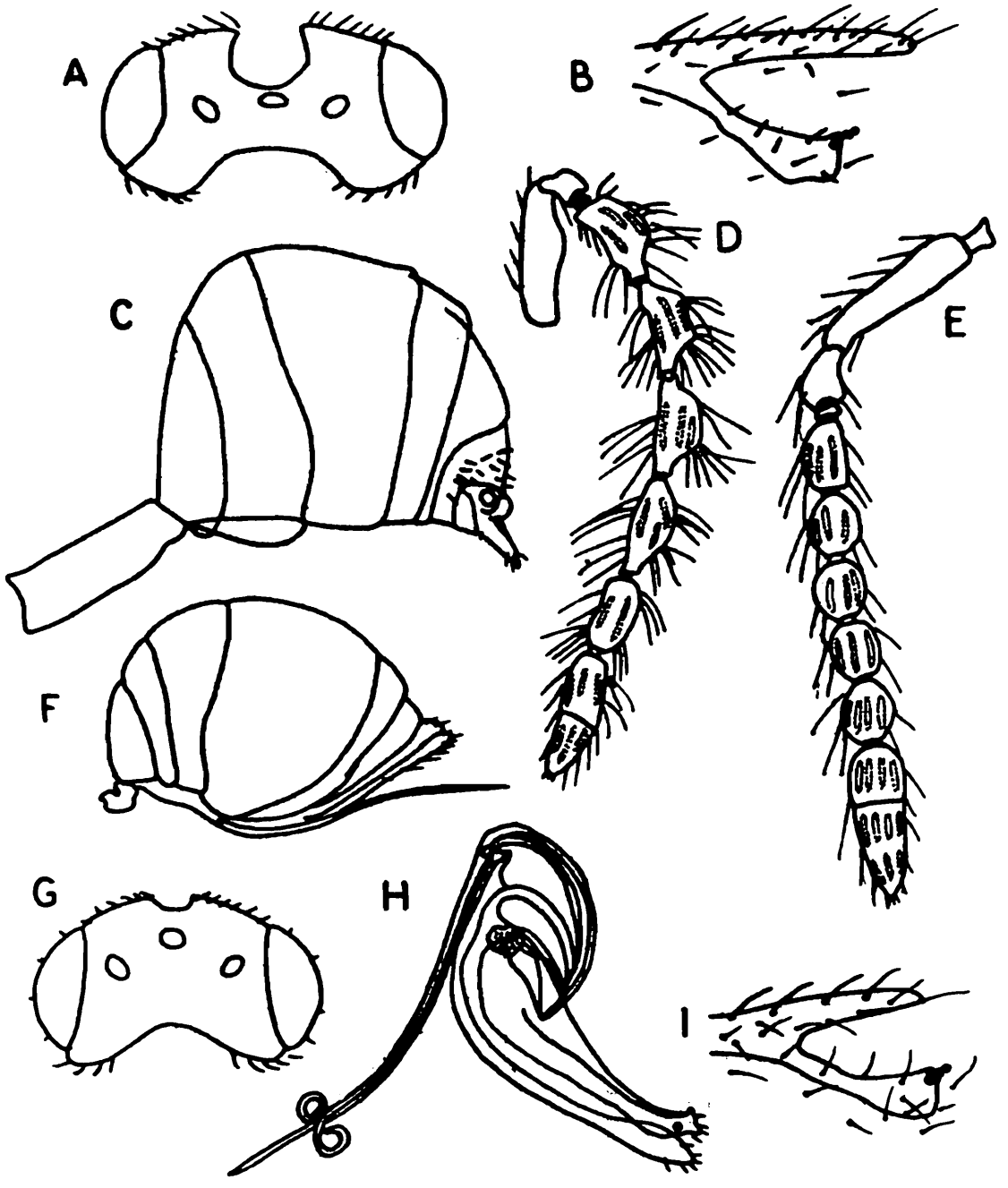

FIG. 116. A-D. *Eurytomacharis dubeyi* Mukerjee, male : A. Head in dorsal view; B. Stigmal area of fore wing; C. Abdomen; D. Antenna; E-I *Eurytomacharis keralensis* Mukerjee, female : E. Antenna; F. Abdomen; G. Head in dorsal view; H. Genitalia; I. Stigmal area of fore wing.

Head closely but shallowly umbilicately punctate on vertex; frons and gena longitudinally striate; eyes glabrous; scrobe deep, coarsely punctate, with the front ocellus outside; above slightly wider than thorax; ocellocular space about 1.25 times, interocellr space about 4 times and front ocellar space about 1.30 times the ocellar diameter; antennae inserted on level of the lower orbital borders, with 10 segments : 1.1.1.5.2; scape short, stout subapically, about 3.15 times as long as thick; pedicel subglobose; funicular segments with short stems and verticillate hairs; first funicular segment about

0.66 of scape and about 2 times as long as thick; second segment subequal; third segment about 1.12 times the first; fourth segment subequal; fifth segment about 0.82 of the fourth; club subequal to the preceding 1.50 segments combined, first segment about 0.78 of the last funicular segment, second segment subequal to the first and gradually reduced apically.

Thorax closely umbilicately but shallowly punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 5 : 12 : 12; fore wing about 2 times as long as wide; veins *m* : *pm* : *st* ratio 100 : 106 : 81; vein *sm* with 12 setae; veins *m* and *pm* with 11 setae; hind coxae about 1.40 times as long as thick; femora about 3.43 times as long as thick, tibiae about 1.16 times femora, with a row of bristles above, spurs double, unequal, the shorter spur about 0.55 of the longer spur, which latter is about 0.60 of metatarsus; tarsus a little shorter than tibiae, metatarsus about 0.30 of tarsus.

Abdomen smooth, about 0.51 of body; petiole matt, equal to hind coxae and about 0.50 of the abdomen; viewed laterally length to height ratio 100 : 83; third tergite longer than the second.

Type locality : Nilambur

Eurytomacharis keralensis Mukerjee

(Fig. 116)

1981 *Eurytomacharis keralensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 33.

Female : Length 2.04 mm. Body black; eyes and ocelli dark brown; antennae brown; legs brown; wings hyaline.

Head closely shallowly umbilicately punctate; viewed above very slightly wider than thorax; scrobes not very deep, smooth, shiny, with the front ocellus outside; ocellocular space equal to ocellar diameter; interocellar space about 3.66 times and front ocellar space about 1.33 times the ocellar diameter; antennae inserted far above the level of lower orbital borders, with 10 segments : 1.1.1.5.2; scape long, slender, about 4 times as long as thick; pedicel about 0.35 of scape; first funicular segment longest, about 1.60 times as long as thick; funicular segments 2-5 subglobose; 2-4 subequal; fifth a little longer; club subequal to the preceding 2.50 segments combined; first club segment subequal to the last funicular segment, second segment about 1.75 times the first, obtusely conically reduced apically.

Thorax closely, shallowly, umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 55 : 90 : 110; fore wing about 2 times as long as wide; veins *m* : *pm* : *st* ratio 100 : 88 : 100; vein *sm* with 11 setae, veins *m* and *pm* each with 4 setae; hind coxae about 1.50 times as long as thick; femora about 1.91 times coxae and about 3.83 times longer than

thick; tibiae a little longer than femora; tibial spur subequal to metatarsus; tarsus about 0.70 of tibia; metatarsus about 0.26 of tarsus.

Abdomen smooth; petiole distinctly shorter than hind coxae and about as long as thick; abdomen as a whole about 0.46 of body; fourth tergite longest; viewed laterally as long as high; ovipositor slightly exserted.

Type locality : Kasaragode

Eurytomacharis pechiparaiensis Mukerjee

(Fig. 117)

1981 *Eurytomacharis pechiparaiensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 39.

Male : Length 2.30 mm. Body black; eyes and ocelli brown; mandibles dark reddish-brown; teeth black; scape brown basally, otherwise black; rest of antennae brown; fore and middle legs except the black coxae brown; hind leg very dark brown except for the black coxae, yellowish-brown femoral tip, base and tip of tibiae; spurs yellow; tarsus yellow; wings hyaline; aedeagus brown.

Head closely umbilicately punctate; eyes finely and sparsely pubescent; viewed above slightly wider than thorax; ocellocular space about 1.55 times, interocellar space about 2.55 times and front ocellar space almost equal to the ocellar diameter; scrobe well impressed, matt; antennae inserted far above the level of lower orbital borders, with 10 segments : 1.1.1.5.2; scape slightly reduced apically, about 3 times as long as thick; pedicel subglobose; funicular segments with short stems and long verticillate setae; first funicular segment longest, about 0.75 of scape and 2.25 times as long as thick; second segment about 0.90 of the first; third and fourth subequal to the second; fifth segment about 0.87 of the fourth; club subequal to the preceding 1.44 segments combined, first segment about 0.78 of the preceding funicular segment, second segment subequal to the first, conical.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 6 : 11 : 13; fore wing about 2.20 times as long as wide; veins *m* : *pm* : *st* ratio 10 : 10 : 9; vein *sm* with 12 and *m* and *pm* with 12 setae; hind coxae about 1.33 times as long as thick; femora about 3.25 times as long as thick; tibiae cylindrical, with a row of stiff bristles above and about 1.07 times femora, spurs double, unequal; shorter spur about 0.66 of the longer spur, which latter is about 0.83 of metatarsus; tarsus stout, about 0.78 of tibiae; metatarsus about 0.27 of tarsus.

Abdomen smooth; petiole matt, subequal to hind coxae; and about 0.30 of abdomen; abdomen about 0.36 of body; viewed

laterally length to height ratio 100 : 55; third tergite somewhat longer than the second; aedeagus about 0.45 of abdomen.

Type locality : Pechiparai

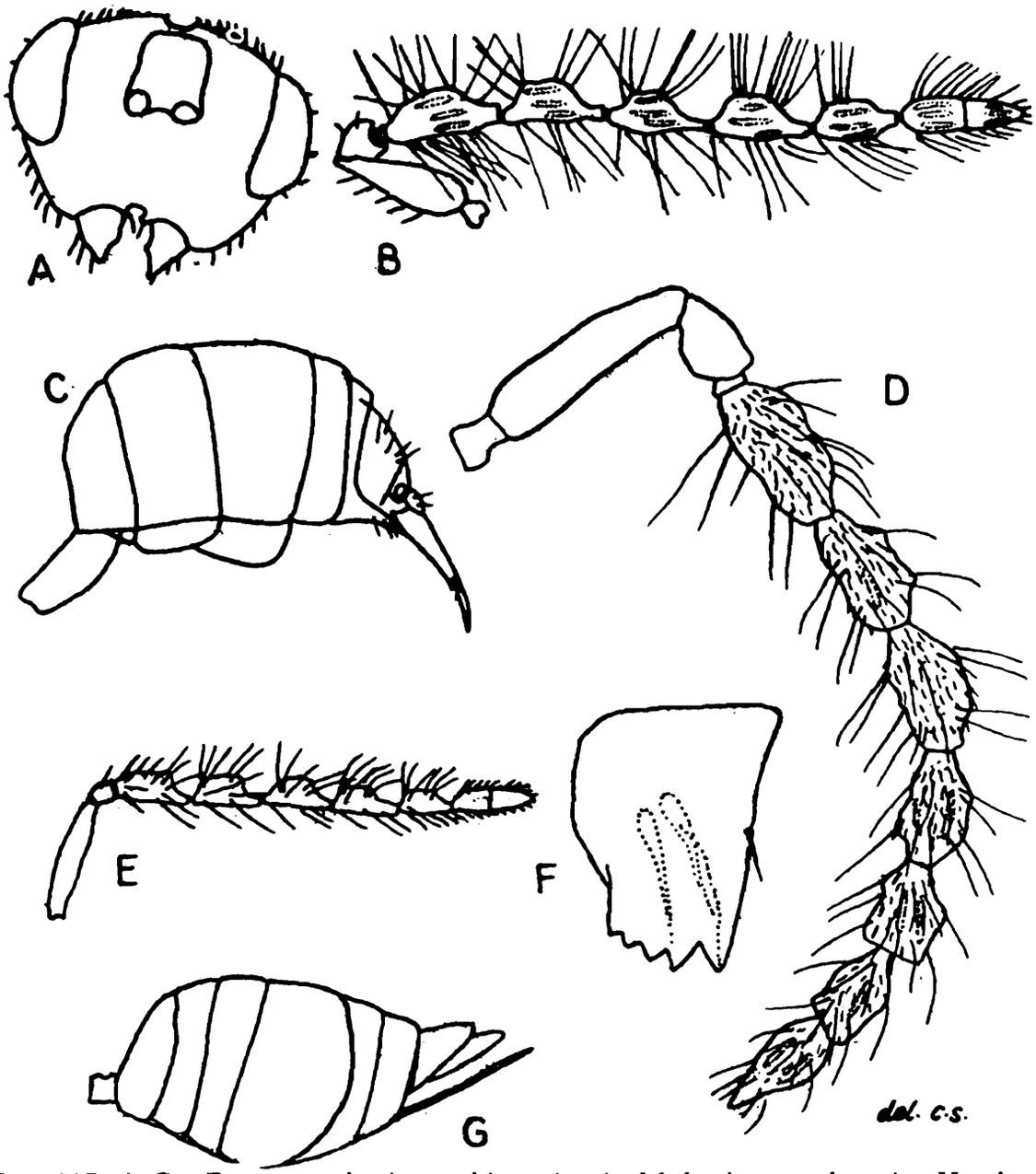

FIG. 117. A-C. *Eurytomacharis pechiparaiensis* Mukerjee, male : A. Head; B. Antenna; C. Abdomen; D. *Risbecoma bruchocida* (Risbec), antenna; E-G. *(After Subba Rao) Eurytoma pallidiscapus* Cameron, male : E. Antenna; F. Mandible; G. Abdomen.

Risbecoma Subba Rao

1957 *Eurytoma* (partim), Risbec, *Mem. Inst. Fr. Afr. noire,* 13 : 342.
1978 *Risbecoma,* Subba Rao, *Proc. Indian Acad. Sci.,* 87 (B) (12) : 298.
1984 *Risbecoma,* Narendran, *Entomon,* 9 (1) : 6.

Female : Head wider than long; eyes about 2 times malar space; scrobe laterally not carinately margined; cheeks carinate only basally;

front ocellus within the apex of scrobe; antennae inserted well above the level of lower orbital border; funicle with 5 segments; club triarticulate; thorax as in the genus *Eurytoma*; fore wing with vein *m* longer than *st,* vein *pm* subequal to *st*; fringe short; parapsidal furrows well developed, complete; propodeum abruptly declivous, flat mesially, without median furrow; convex at the sides; petiole subequal to hind coxae; abdomen not compressed; first tergite longest, second tergite about 0.50 of the first; ovipositor slightly exserted.

Male Basically like the female.

Type-species : Risbecoma bruchocida (Risbec)

This genus is related to *Eurytoma* and *Systole*

Risbecoma bruchocida (Risbec)

(Fig. 117)

1951 *Eurytoma bruchocida,* Risbec, *Mem. Inst. Fr. Afr. noire,* 13 : 342.
1978 *Risbecoma bruchocida,* Subba Rao, *Proc. Indian Acad. Sci.,* 37 (B) (12) : 300.

Type locality Senegal (Africa)

Distribution Africa; India : Bombay

Host : Seeds of *Acacia verrek*

Plutarchia Girault

1926 *Plutarchia,* Girault, *Insec. Inscit. Menstr,* 14 : 58.

Head distinctly longer than high; as wide or wider than thorax; scrobe carinate laterally; front ocellus within scrobe; funicle with 5 segments; club with 3 segments; vein *m* longer than *st;* parapsidal furrows complete; propodeum flat; first tergite with 2 lateral carinae; second tergite largest.

This genus closely resembles *Eurytoma,* but differs in the second tergite being largest and in the presence of paired carinae on first tergite.

Type-species : Plutarchia bicarinativentris Girault

Plutarchia indefensa (Walker)

1860 *Eurytoma indefensa,* Walker, *Ann. Mag. nat. Hist.,*6 : 358.
1938 *Eurytoma indefensa,* Mani, *Cat. Indian Ins.,* 23 : 70.
1974 *Plutarchia indefensa,* Subba Rao, *J. Ent.,* (B) 42 (2) : 200.

Female : Body black; scape yellow; rest of antenna dark brown; coxae dark brown; femora and tibia brown with black in middle; tarsi pale yellow; face with strong converging striae; funicular

segments subequal; club a little longer than funicular segments 5-6 combined; interocellar space 2 times ocellar space; thorax with irregular shallow punctae; veins *m* : *pm* : *st* ratio 13 : 10 : 9; petiole very short; abdomen a little shorter than rest of body; first tergite short; second tergite 4 times the first.

Type locality : Ceylon

Distribution : Ceylon; India : Ranchi

Host : Melanagromyza

Eurytoma Illiger

1807 *Eurytoma,* Illiger, *Mag. Insektenk.*, 6 : 192.
1811 *Decatoma,* Spinola, *Ann. Mus. Hist. Nat.*, 17 : 151.
1848 *Tetrasema,* Walker, *List Chalc. Brit. Mus.*, 2 : 54.
1857 *Ennetoma,* Dahlbom, *Forh. Öfv. Svensk. Vet. Akad.*, 14 : 292.
1891 *Eurytoma;* Howard, *Proc. ent. Soc. Washington.*, 2 : 66.
1904 *Eurytoma,* Ashmead, *Mem. Carnigie Mus.*, 1 (4) : 262.
1904 *Decatoma,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 268.
1909 *Eurytoma,* Schmiedeknecht, *Gen. Ins.*, 97 : 139.
1909 *Decatoma,* Schmiedeknecht, *Gen. Ins.*, 97 : 132.
1913 *Bephratella,* Girault, *Arch. Naturg.*, 79 (6) : 95.
1938 *Eurytoma,* Mani, *Cat. Indian Ins.*, 23 : 68.
1938 *Decatoma,* Mani, *Cat. Indian Ins.*, 23 : 68.
1957 *Eurytoma,* Erdös, *Allat. Kozlem,* 46 : 58, 59, 61.
1959 *Eurytoma,* Claridge, *Ent. month. Mag.*, 95 : 2.
1967 *Eurytoma,* Bugbee, *Proc. US Nat. Mus.*, 118 (3533) : 433-552.
1978 *Eurytoma,* Zerova, *Faun. Ukr. Akad. Nauk.*, 2 (9) : 203.
1979 *Eurytoma,* Krombein *et al.*, Hymen. N. America,, 1 : 851.

Body generally black, rarely with yellow or deep brown.

Head and thorax with coarse, shallow, umbilicate punctae; antennae in female weakly thickened apically, with a single annellus; funicular segments 6-7 cylindrical in male constricted apically into short stems and often with long verticillate hairs; club with 3 or 2 segments; gena acutely margined; fore wing with vein *m* much longer than thick and than *st;* vein *pm* not much longer than *st;* without infumate spots or marking; hind tibial spurs double; propodeum concave, with or without narrow median furrow and then reticulate; abdomen strongly compressed ovate; fifth tergite viewed laterally in female shorter than wide; in male fourth tergite largest, with 7 visible tergites; ninth tergite ploughshare shaped, with cerci; petiole equal to or longer than hind coxae.

Type-species : Eurytoma appendigaster (Swed.)

Species parasitic on Hymenoptera, Coleoptera, Diptera, Lepidoptera, and Homoptera; many species are phytophagous, inquilines in galls. One species *Eurytoma pater* Phillips from America

starts as a parasite of larva of *Harmolita tritici* on stem of *Elymus* spp. and later completes development on plant tissue.

KEY TO SPECIES

1.	Vein *pm* distinctly longer than *st*	2
	Vein *pm* not longer than *st*, at the most subequal to *st*	3
2.	Large species, body 5.20 mm long; ocellocular space 2 times ocellar diameter	*Eurytoma samsanowi* Vasiljew
	Medium-sized species, body length 3.00 mm or more; ocellocular space subequal to ocellar diameter	*Eurytoma monemae* Ruschka
	Medium-sized species vein *pm* much longer than *st*	*Eurytoma pallidiscapus* Cameron
	Smaller species; body length not exceeding 3.00 mm, usually about 2.50 mm; ocellocular space about 2.00 times ocellar diameter	*Eurytoma poroensis* Mukerjee
3.	Vein *m* longer than *pm*	4
	Vein *m* subequal to *pm*	12
4.	Vein *m* about 2.00 times *pm*	5
	Vein *m* less than 2.00 times *pm*	11
5.	Body length over 2.50 mm	6
	Body length not more than 2.00 mm	8
6.	Club biarticulate; hind tibial spur about 0.66 of metatarsus; scape at least 3.42 times longer than thick	*Eurytoma monemae* Ruschka
	Club triarticulate, though the second suture may be faint	7
7.	Antennae entirely pale testaceous; vein *m* about 1.50 times *st*	*Eurytoma setitibia* Gahan
	Antennae brownish-black, except for the honey-yellow scape; vein *m* about 1.25 times *st*	*Eurytoma sabiae* Mani
8.	Club more or less distinctly triarticulate	*Eurytoma nesiotes* Crawford
	Club with less than 3 segments, either biarticulate or even unsegmented	9
9.	Club unsegmented; ocelloculr space about 2.00 times ocellar diameter	*Eurytoma manpurensis* Mukerjee
	Club biarticulate	10
10.	Third tergite largest, longer tibial hind spur about 0.71 of metatarsus; ocellocular space less than 1.20 times ocellar diameter	*Eurytoma kasaragodensis* Mukerjee
	Fourth tergite largest; longer hind tibial spur about 0.86 of metatarsus; ocellocular space about 1.50 times ocellar diameter	*Eurytoma karnatakensis* Mukerjee (Female)
11.	Third tergite largest	*Eurytoma karnatakensis* Mukerjee (Male)
	Fourth tergite longest	*Eurytoma nesiotes* Crawford

12.	Frons between scrobe and eye lontigudinally reticulate; club distinctly triarticulate	*Eurytoma hindupurensis* Gahan
	Frons and face rugose; club biarticulate	*Eurytoma tatipakensis* Kurian
	Frons umbilicately punctate	13
13.	Ocellocular 3 times ocellar diameter	*Eurytoma sabiae* Mani
	Ocellocular space 1.50 times ocellar diameter	*Eurytoma chrysothrix* Waterston

*Eurytoma samsanowi Vasiljew

1915 *Eurytoma samsanowi,* Vasiljew, *Trudi Bur. Ent. Petrograd,* 11 (7) : 1.
1938 *Eurytoma samsanowi,* Mani, *Cat. Indian Ins.,* 23 : 153.
1939 *Eurytoma samsanowi,* Pruthi & Batra, *Indian J. agric. Sci.,* 9 (2) : 277-283.

Female : Length 5.20 mm. Body black, dull; clothed with silvery-white hairs; antennae dark brown; scape very dark reddish-brown; coxae black, legs pale reddish-brown; wings hyaline; abdomen reddish-brown; hypopygium tinged black.

Head closely shallowly umbilicately punctate, distinctly wider than thorax, viewed above transverse, a little less than 2 times as wide as long; face somewhat flattened; scrobes deep, fainty margined; ocellocular space 2 times ocellar diameter, interocellar space 2 times the ocellocular; vertex rounded, slightly impressed in the middle; eyes glabrous, except for some hairs near the margin; antennae inserted on level of lower orbital border, with 11 segments; scape reaching front ocellus, slender, 3.30 times as long as thick; pedicel 2 times as long as thick; first funicular segment a little longer than pedicel, remaining funicular segments subequal, club equal to preceding 3 segments combined; thorax coarsely umbilicately punctate, pronotum more finely punctate than mesonotum, nearly 2 times as wide as long, parapsidal furrows complete; scutellum 1.50 times as long as wide; propodeum rugose; fore wing 2 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 35 : 5 : 10 : 5; hind tibial spur about 0.60 of metatarsus; abdomen as long as head and thorax combined, slightly compressed, conical, viewed from the side first tergite short, second tergite 1.50 times the first, third and fourth tergites subequal, distinctly longer than second.

Male : Length 4.50 mm. Body black, closely umbilicately punctate, with silvery-white hairs, antennae dark reddish-brown. Scape more slender and little longer than in female; first funicular segment longest, remaining funicular segments becoming gradually shorter; with short constrictions, apically 2 rows of long verticillate hairs; club equal to preceding 2 segments combined obtusely pointed apically, otherwise as in female; petiole 1.50 times as long as hind coxae; abdomen subglobose, second tergite largest, a little larger than first tergite, third narrow.

Type locality : Southern Europe
Distribution : Pakistan
Host : Seeds of apricot

* This species may prove to be identical with *E. amygdali* Enderlein (1907 *Z. Hym. Dipt.,* 7 : 303) — *Note added in second proof.*

Eurytoma monemae Ruschka

1918 *Eurytoma monemae,* Ruschka, *Ent. Mitt.,* 7 : 167.
1919 *Eurytoma parasae,* Gahan, *Proc. US Nat. Mus.,* 56 (2299) : 514.
1921 *Eurytoma parasae,* Ramakrishna Ayyar, *Rep. Proc. IV ent.* Pusa, 364.
1938 *Eurytoma parasae,* Mani, *Cat. Indian Ins.,* 23 : 71.
1938 *Eurytoma thoseae,* Gahan, *Proc. ent. Soc. Washington,* 40 (8) : 210.
1940 *Eurytoma monemae,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 7.

Female : Length 3.80 mm. Body generally black; flagellum reddish-brown; scape, pedicel, coxae reddish-testaceous; ovipositor pale testaceous; wings hyaline.

Head coarsely umbilicately punctate; frons in the middle with a low, smooth longitudinal ridge, on either side of which the punctae become irregular striations coverging to clypeus; ocelli large; ocellocular space subequal to ocellar diameter; scape short; pedicel hardly longer than thick; first funicular segment about 2 times the pedicel and a little more than 2 times its own thickness; following funicular segments becoming gradually shorter; last segment slightly less than 2 times as long as thick; club slightly longer than preceding 2 segments combined, triarticulate, with the apical suture faint; thorax uniformly umbilicately punctate; propodeum declivous, with a wide deep impressed median area, rugospunctate on either side of the depression and bounded by an obscure carina; fore coxae beneath with a broad, obliquely longitudinal groove the entire length, finely transversely striate; hind coxae finely reticulopunctate; abdomen subequal to thorax, subcompressed; acute apically; polished, but slightly reticulate at the sides on the third and fourth tergites; vein *m* about 1.50 times *st*; vein *pm* distinctly longer than *st*.

Type locality : 'Europe'

Distribution : China; India : Coimbatore; Europe

Host : Parasa leipda, Monema flavesceus Walker, etc.

Eurytoma pallidiscapus Cameron

(Fig. 117)

1912 *Eurytoma pallidiscapus,* Cameron, *Indian forest Rec.,* 4 : 8.
1935 *Eurytoma pallidiscapus,* Ferrière, *Bull., ent. Res.,* 26 : 393.
1938 *Eurytoma pallidiscapus,* Mani, *Cat. Indian Ins.,* 23 : 70.
1940 *Eurytoma pallidiscapus,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 8.

Female/Male : Female length 2.80-3.80 mm. Body black; scape and pedicel yellow, flagellum black; legs yellow; coxae black, front and middle femora broadly black above, except at tip, hind femora black, except at base and tip; base and tip of tibiae and tarsi lighter yellow; tegulae and wing veins light yellow; ovipositor tip brown.

Head finely reticulately shallowly punctate; face and cheeks with white ciliae; clypeus smooth; scrobe with carinate margins, as broad

as its distance from the eye, reaching above front ocellus; ocellocular space equal to ocellar diameter; antennae inserted in the middle of face; scape slender, reaching almost the front ocellus; pedicel short, scarcely longer than thick; funicle with 5 segments, first funicular segment more than 2 times as long as thick, second shorter, but still almost 2 times as long as thick, following segments gradually shorter, longer than thick; club with 2 segments, about as long as preceding 2 segments combined.

Thorax more strongly reticulate than head, dull; propleura finely punctate; mesopleura smooth anteriorly, punctate and irregularly striate in the middle, smooth and more strongly striate posteriorly; propodeum reticulate on sides, median concave portion punctate, with 2 median carinae converging behind; middle area thus formed elongate and regularly reticulate; wings not reaching to the tip of the abdomen; veins *m* : *pm* : *st* ratio 150 : 150 : 100; hind coxae punctate, dull above; abdomen quite smooth; petiole very short, broader than long; second tergite short, tergites 3-4 equal; fifth 2 times fourth; sixth and seventh very short, transverse, eighth a little longer and narrower, triangualr; ovipositor scarcely protruding.

Male : Length 1.50-3.00 mm. Femora more blackish, only yellow at tip; scape short, pedicel rounded, fifth funicular segment stout in the middle, with 2 whorls of hairs, and ending in a narrow petiole; first funicular segment a little shorter than scape, following segments shorter, but longer than thick; club with 2 segments not separated by a petiole; abdomen shorter than thorax, seen from the side rounded, with the petiole a little longer than the hind coxae.

Type locality : Dehra Dun

Distribution : Dehra Dun, Ranchi, Mysore

Host : Holcocera pulverea Meyerick on lac insect

Eurytoma poroensis Mukerjee

(Fig. 118)

1981 *Eurytoma poroensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 25.

Female : Length 2.54 mm. Body black; eyes and ocelli yellowish-brown; mandibles red; except for the brownish-yellow scape, antennae dark brown; except for the black coxae and pale tarsi, legs yellowish-brown; wings hyaline; ovipositor tip reddish-brown.

Head closely umbilicately punctate; eyes glabrous; scrobe shallow, with the front ocellus outside; viewed above slightly wider than thorax; ocellocular space about 2 times, interocellar space about 4 times and front ocellar space about 1.25 times the ocellar diameter; antennae inserted a little above the level of lower orbital borders,

with 10 segments : 1.1.1.5.2; scape thickened in the basal 0.60 and about 5 times as long as thick; pedicel about 0.20 of scape; funicular segments elongate-oval; first funicular segment longest, about 2.33 times as long as thick; funicular segments 2-5 subequal; club subequal to the preceding 2 segments combined, with 2 segments distinctly separated; first club segment about 1.35 times as long as thick, second segment about 1.60 times the first.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 4 : 7 : 7; fore wing length to width ratio about 100 : 40; veins *m* : *pm* : *at* ratio 100 : 67 : 54; vein *sm* with 10, and *pm* with 12 setae; hind coxae about 1.47 times as long as thick; femora about 2 times coxa and 4 times as long as thick; tibia dorsally with 3 long spines, about a little longer than femora, spurs double, the shorter spur about 0.50 of the longer spur, which latter about 0.66 of metatarsus; tarsus about 0.93 of tibia, metatarsus about 0.33 of tarsus.

Abdomen smooth, about 0.41 of body; petiole shorter than hind coxae, almost as long as thick; fourth tergite longest; ovipositor slightly exserted.

Type locality Poro North (North Bengal)

Eurytoma setitibia Gahan

1919 *Eurytoma setitibia,* Gahan, *Proc. US nat. Mus.,* 56 (2299) : 517.
1921 *Eurytoma setitibia,* Ramakrishna Ayyar, *Rep. Proc. IV ent. Meet. Pusa,* 364.
1938 *Eurytoma setitibia,* Mani, *Cat. Indian Ins.,* 23 : 71.
1940 *Eurytoma setitibia,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 8.

Female : Length 2.80 mm. Body generally black; antennae, fore and middle femora, all tibiae and tarsi pale reddish-testaceous.

Head coarsely umbilicately punctate, except for a narrow median patch on frons; genal carina strongly developed; occipur umbilicately punctate above and shagreened below; scape reduced apically; pedicel as long as thick, subglobose; funicle submoniliform; first funicular segment about 2 times as long as pedicel and about 1.50 times as long as thick, remaining funicular segments subequal and slightly longer than thick; club triarticulate, longer than the preceding 2 segments combined, with the apical suture obscure.

Thorax umbilicately punctate; sides of scutellum and axillae shagreened below; propodeum rugosopunctate at the sides, with wide, deep median excavation, bounded by irregular carinae, smooth medially and finely shagreened on the sloping sides; fore coxae excavate beneath, without transverse carina and tooth; mesosternum with a distinct median carina, but without tooth; hind tibiae above in basal 0.50 with 3 stiff bristles and also finely hairy, the distal bristle longest and subequal to metatarsus; fore wing with vein *m* about 1.50 times *st,* vein *pm* slightly longer than *st;* abdomen equal to the

rest of body, subcompresed; fourth tergite equal to tergites 1-3 combined; tergite 5 very short, often concealed under the fourth; all tergites reticulately punctate at the sides and more obscurely so in the middle.

Type locality : Coimbatore

Host : Parasitic on weevil causing gall on *Cordia myxa.* also on Psyllid causing gall on leaf of *Trewia nudiflora?*

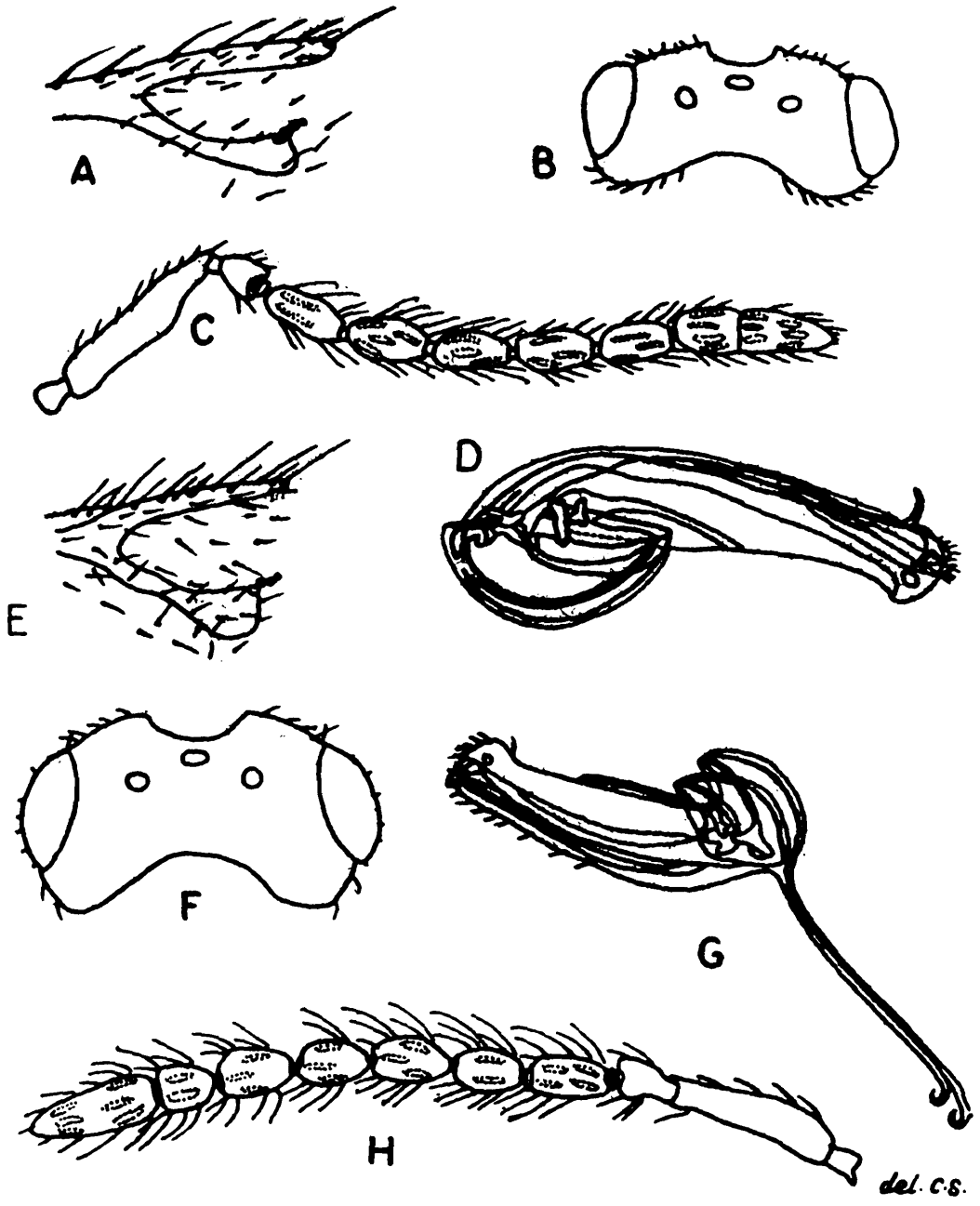

FIG. 118. A-D. *Eurytoma poroensis* Mukerjee, female : A. Stigmal area of fore wing; B. Head in dorsal view; C. Antenna; D. Genitalia; E-H. *Eurytoma manpurensis* Mukerjee, female : E. Stigmal area of fore wing; F. Head in dorsal view; G. Genitalia; H. Antenna.

Eurytoma sabiae Mani

1969 *Eurytoma sabiae,* Mani, *Orient. Ins.,* 3 (4) : 313.

Female Length 2.50 mm. Body black; except the honey-yellow scape, rest of antennae brownish-black; propleura honey-yellow; legs honey-yellow.

Head wider than long, distinctly wider than thorax; gena margined, a little shorter than eye; vertex and frons with umbilicate punctae closer together than their own diameter; scrobe deep, moderately margined, with the front ocellus just outside of it; front ocellar space subequal to ocellar diameter; interocellar space nearly 3 times ocellar diameter; ocellocular space subequal to the interocellar space; antennae a little less than 0.50 of body, inserted a little above lower orbital border, with 11 segments : 1.1.1.5.3; segments generally cylindrical, not distinctly incrassate apically; pedicel slender, cylindrical, somewhat less than 0.50 of scape; first funicular segment slightly longer than pedicel and about 0.50 of scape; second funicular segment about 0.66 of the first segment; third segment slightly longer than second, but distinctly shorter than the first; segments 4-5 subequal, each nearly equal to the second segment; club about 1.60 times the first funicular segment and about equal to scape; first club segment distinctly separated from the rest, second-third segments indicated by only a spurious line.

Thorax with coarse umbilicate punctae, separated by less than their own diameter; as a whole thorax narrow, greatly arched; parapsidal furrows well developed, complete; mesonotum without a smooth area; fore wing a little more than 2 times as long as wide; veins *m* : *st* : *pm* ratio 125 : 100 : 100; fore metatarsus about 1.50 times the second tarsal segment; third tarsal segment slightly shorter; fourth segment equal to the third; fifth segment equal to the second; hind tibial spurs double, the longer spur about 0.25 of metatarsus; apically and subapically hind tibiae with stiff spines; hind tarsal segments somewhat stouter than the fore tarsal segments.

Abdomen compressed, shiny, length to height ratio 9 : 5, petiole slightly reduced apically, nearly equal to the propodeum and about 0.33 of rest of abdomen; sixth tergite with short but conspicuous pubescence; exposed part of ovipositor sheath about 0.25 of petiole.

Male : Length 2.00 mm. Body black, sculpture as in female.

Head wider than thorax; gena margined, distinctly shorter than eye; antennae a little more than 0.50 of body, with 10 segments : 1 1.1.4.3; funicular segments nodose, with long stems and with a basal and an apical verticillate series of hairs; scape fusiform, about 4 times as long as thick in the middle; pedicel about 0.25 of scape; first funicular segment about 2.30 times pedicel, with a slender cylindrical stem subequal to pedicel; second segment equal to the first, but with more slender stem; third segment equal to the

first; fourth segment slightly shorter and with a relatively short stem; club a little longer than scape; first club segment about 0.83 of the preceding segment; second club segment about 0.80 of the first; third segment equal to the second.

Thorax as in female; hind metatarsus about 1.60 times the second tarsal segment; abdomen subovate, 1.25 times as long as high; petiole about 2 times propodeum and 1.50 times hind coxae.

Type locality : Dalhousie, 2400 m above mean sea-level.

Host Acroectasis campanulata Mani causing gall No. 500 on *Sabia campanulata* Wall.

Eurytoma manpurensis Mukerjee

(Fig. 118)

1981 *Eurytoma manpurensis,* Mukerjee, *Rec. zool. Surv. India* (Misc. Pub. Occ. Pap.) 25 : 23.

Female : Length 2.08 mm. Body black; eyes and ocelli dark brown; mandibles brown; except for the yellowish-brown scape, antennae brown; legs brown; wings hyaline; ovipositor brown.

Head closely umbilicately punctate; eyes glabrous; scrobe smooth, shiny, with the front ocellus outside; viewed above distinctly wider than thorax; ocellocular space about 2 times, interocellar space about 3.66 times and front ocellar space about 1.33 times the ocellar diameter; antennae inserted a little above the level of lower orbital borders, with 10 segments : 1.1 1.6.1; scape slender, cylindrical, about 4.25 times as long as thick; pedicel about 0.36 of scape; funicular segments submoniliform, with long hairs; first funicular segment longest, about 1.66 times as long as thick; funicular segments 2-5 subequal, each about 0.90 of the first; sixth segment shortest and about 0.77 of the fifth segment; club ovate, about 2.60 times the last funicular segment and obtusely pointed.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 6 : 10 : 10; fore wing length to width ratio 100 : 42; veins *m* : *pm* : *st* ratio 10 : 6 : 6; vein *sm* with 13 setae, *m* with 7 and *pm* with 6 setae; hind wing about 5 times as long as wide; hind coxae about 1.33 times as long as thick; femora about 1.91 times coxae and 3.53 times as long as thick; tibiae about 1.26 times femora and about 0.30 times as long as thick, with 5 stiff spines above, unequal double spurs, the shorter spur about 0.60 of the longer, which latter is about 0.62 of metatarsus; tarsus about 0.86 of tibiae, metatarsus about 0.33 of tarsus.

Abdomen smooth, about 0.60 of body; petiole shorter than hind coxae, fourth tergite longest; ovipositor a little exserted.

Type locality : Manpur (Madhya Pradesh)

Eurytoma chrysothrix Waterston

1924 *Eurytoma chrysothrix,* Waterston, *Bull. ent. Res.,* 15 : 69.
1938 *Eurytoma chrysothrix,* Mani, *Cat. Indian Ins.,* 23 : 69.

Female Length 3.75 mm. Body black; funicle piceous; sixth tergite brown basally; scape, pedicel, annellus, femora and tibiae ferrugenous; tarsi pale brown; body pubescence golden yellow; abdomen shiny.

Head viewed above a little more than 2 times as wide as long; viewed from front a little wider than high; eyes glabrous; ocellar triangular obtuse; ocellocular space about 1.50 times the ocellar diameter; front ocellus outside the scrobe; vertex and upper part of face umbilicately punctate; conspicuous carina extends down from lateral ocellus, parallel to the orbit, with a shallow sulcus between, becoming not parallel below lower orbital border; clypeus shiny and deep, with a low carina; mandible with 3 teeth; antennae a little less than 0.50 of body; scape about 4 times as long as thick and subequal to the first 2 funicular segments combined, abruptly reduced apically; pedicel subglobose; funicular segments ratio 11 : 10 : 10 : 9.5; club segment ratio 7.5 : 6.0 : 4.5; funicular segments with a short neck at each end, the basal neck cylindrical.

Pronotum 2 times as long as wide, with distinct collar; propodeum medially broadly depressed, crenulate, irregularly reticulate; fore wing about 2 times as long as wide; veins *sm* : *m* : *st* : *pm* ratio 100 : 28 : 60 : 25; hind wing a little more than as long as wide; middle and fore metatarsus about 2 times the second segment.

Abdomen strongly compressed, smooth; fourth tergite slightly rough; petiole transverse, with a shiny depression above; tip of ovipositor with 8 teeth.

Type locality Walayar

Host : Reared from bamboo shoots damaged by some unknown insects.

Eurytoma nesiotes Crawford

1910 *Eurytoma fulvipes,* Crawford, *Proc. US nat. Mus.,* 38 : 129. (preoccupied in Fitch 1865)
1911 *Eurytoma nesiotes,* Crawford, *Proc. US nat. Mus.,* 41 : 273.
1919 *Eurytoma denticoxa,* Gahan, *Proc. US nat. Mus.,* 56 (2299) : 515.
1919 *Eurytoma dentipectus,* Gahan, *Proc. US nat. Mus.,* 56 (2299) : 516.
1921 *Eurytoma denticoxa,* Ramakrishna Ayyar, *Rep. Proc. IV ent. Meet. Pusa,* 364.
1921 *Eurytoma dentipectus,* Ramakrishna Ayyar, *Rep. Proc. IV ent. Meet. Pusa,* 364.
1938 *Eurytoma densticoxa,* Mani, *Cat. Indian Ins.,* 23 : 69.
1938 *Eurytoma dentipectus,* Mani, *Cat. Indian Ins.,* 23 : 69.
1938 *Eurytoma nesiotes,* Gahan, *Proc. Ent. Soc. Washington,* 40 (8) : 210.
1940 *Eurytoma dentipectus,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 :

Female : Length 2.00 mm. Body generally black; scape, middle tibiae and tarsi testaceous, but tibiae often tinged brown; pedicel and funicle brown; fore and hind femora darker brown, except sometimes basally and apically; ovipositor black; wings hyaline.

Head umbilicately punctate, sometimes frons with or without a smooth median area; genal carina well developed; scape slightly thickened basally, but reduced apically; pedicel subglobose; funicular segments 5, submoniliform; first funicular segment longest, about 1.33 times the pedicel; other funicular segments subequal and slightly longer than thick; club conic-ovate, slightly longer than the preceding 2 segments combined, with 2 obscure sutures, so that the club is faintly triarticulate.

Thorax umbilicately punctate; propodeum rugose, broadly impressed medially, with or almost without limiting carinae laterally of the impressed area, in the middle with paired faint median longitudinal carinae; fore wing with vein *m* slightly longer than *st,* which latter is subequal to *pm;* fore coxae excavate behind a distinct tooth like projection above the middle; hind coxae reticulate outside, shiny; abdomen a little longer than thorax, shiny, subcompressed, acutely pointed apically; fourth tergite not quite as long as the second and third tergites combined; finely reticulate at the sides; tip of ovipositor exserted.

Male : Length 2.00 mm. Body black; scape pale basally, dark brown apically; fore tibiae, base and tips of middle and hind tibiae, tips of femora and all tarsi pale testaceous, otherwise legs dark brown to black; middle femora and tibiae less dark than hind femora basally.

Type locality : Philippines

Distribution : India : Coimbatore : Philippines

Host : Gall midges *Asphondylia sesami* Felt causing gall on flower of *Sesamum indicum* and midge barvae infesting ear of *Zea mays.*

Eurytoma kasaragodensis Mukerjee

(Fig. 119)

1981 *Eurytoma kasaragodensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 21.

Female : Length 2.00 mm. Body black; eyes and ocelli dark brown; mandibles black with teeth dark brown; antennae brown; except for black coxae fore and middle legs brown; hind leg brown but for the black coxa and dark brown femur; wings hyaline; ovipositor brownish-black.

Head closely umbilicately punctate; eyes very finely and sparsely hairy; viewed above distinctly wider than thorax; ocellocular space

about 1.16 times, interocellar space about 3.00 times and front ocellar space subequal to ocellar diameter; scrobe smooth; front ocellus outside; antennae inserted well above the level of lower orbital borders, with 10 segments : 1.1.1.5.2; scape about 3.33 times as long as thick; pedicel subglobose; funicular segments submoniliform; first funicular segment longest, about 1.30 times as long as thick; second segment about 0.77 of the first; third and fourth segments subequal; fifth segment a little shorter; club subequal to the preceding 2.30 segments combined; first segment about 0.87 of the fifth funicular segment; the second segment about 2 times the first.

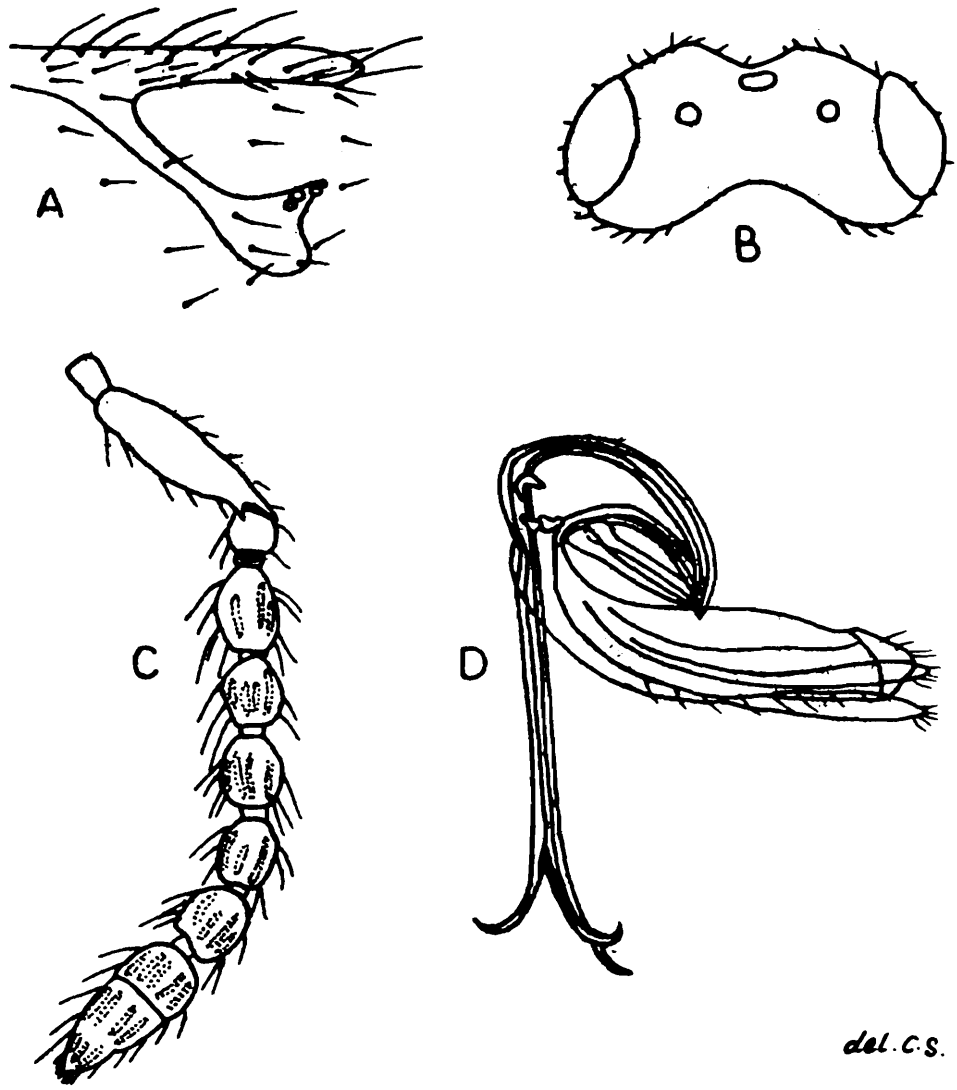

FIG. 119. *Eurytoma kasaragodensis* Mukerjee, female : A. Stigmal area of fore wing; B. Head in dorsal view; C. Antenna; D. Genitalia.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum : mesonotum : scutellum 6 : 19 : 8; fore wing

about 2 times as long as wide; veins *m* : *pm* : *st* ratio 10 : 5 : 5; *sm* with 12 setae, *m* with 6 and *pm* with 5 setae; hind wings about 5 times as long as wide; hind coxae about 1.50 times as long as thick; femora about 1.80 times coxae and about 3.80 times as long as thick; tibia slender, a little longer than femur, with long paired spines near base dorsally, unequal double spurs, the shorter spur about 0.60 of the longer and the longer spur about 0.70 of metatarsus; tarsus about 0.80 of tibia; metatarsus about 0.33 of tarsus.

Abdomen about 0.55 of body, smooth; petiole transverse, much shorter than hind coxae; fourth tergite longest; ovipositor slightly exserted.

Type locality : Kasaragode

Eurytoma karnatakensis Mukerjee

(Fig. 120)

1981 *Eurytoma karnatakensis,* Mukerjee, *Rec. zool. Surv. India,* (Misc. Pub. Occ. Pap.) 25 : 16.

Female : Length 2.00 mm. Body black; eyes and ocelli brown; mandibles red; except for the yellowish-brown scape, antennae brown; except for black coxae and paler tibia and tarsus, legs yellowish-brown.

Head closely umbilicately punctate; eyes finely and sparsely pubescent; mandibles bidentate; viewed above slightly wider than thorax; viewed in front length to width 75 : 100; ocellocular space about 1.50 times ocellar diameter; interocellar space about 3.50 times ocellar diameter; front ocellar space about 1.30 times ocellar diameter; front ocellus outside the scrobe; antennae inserted above the level of lower orbital borders; scrobe shallow, sculptured as elsewhere on head above and smooth below; segments 10 : 1.1.1.5.2; scape reduced apically, about 3.50 times as long as thick; pedicel about 0.30 of scape; annellus transverse; funicular segments submoniliform, subequal, but the first segment distinctly cylindrical and about 0.44 of scape; club subequal to the preceding 2.33 funicular segments combined; second segment about 1.77 times the first, which latter is about 0.87 of the last funicular segment.

Thorax closely umbilicately punctate; parapsidal furrows complete; pronotum; mesonotum : scutellum ratio 5 : 10 : 10; fore wing a little more than 2 times as long as wide; veins *m* : *pm* : *st* ratio 100 : 52 : 48; vein *sm* with 10 setae; hind coxae about 1.37 times as long as thick; femora somewhat thickened in the middle and about 2 times coxa and 3.80 times as long as thick; tibia subequal to femora and about 7 70 times as long as thick, spurs double, the shorter spur about 0.60 of the longer, which is about 0.61 of metatarsus; tarsus about 0.87 of tibia; metatarsus about 0.30 of tarsus; abdomen

smooth, shiny; about 0.50 of body; petiole shorter than hind coxae; fourth tergite longest; ovipositor well exserted.

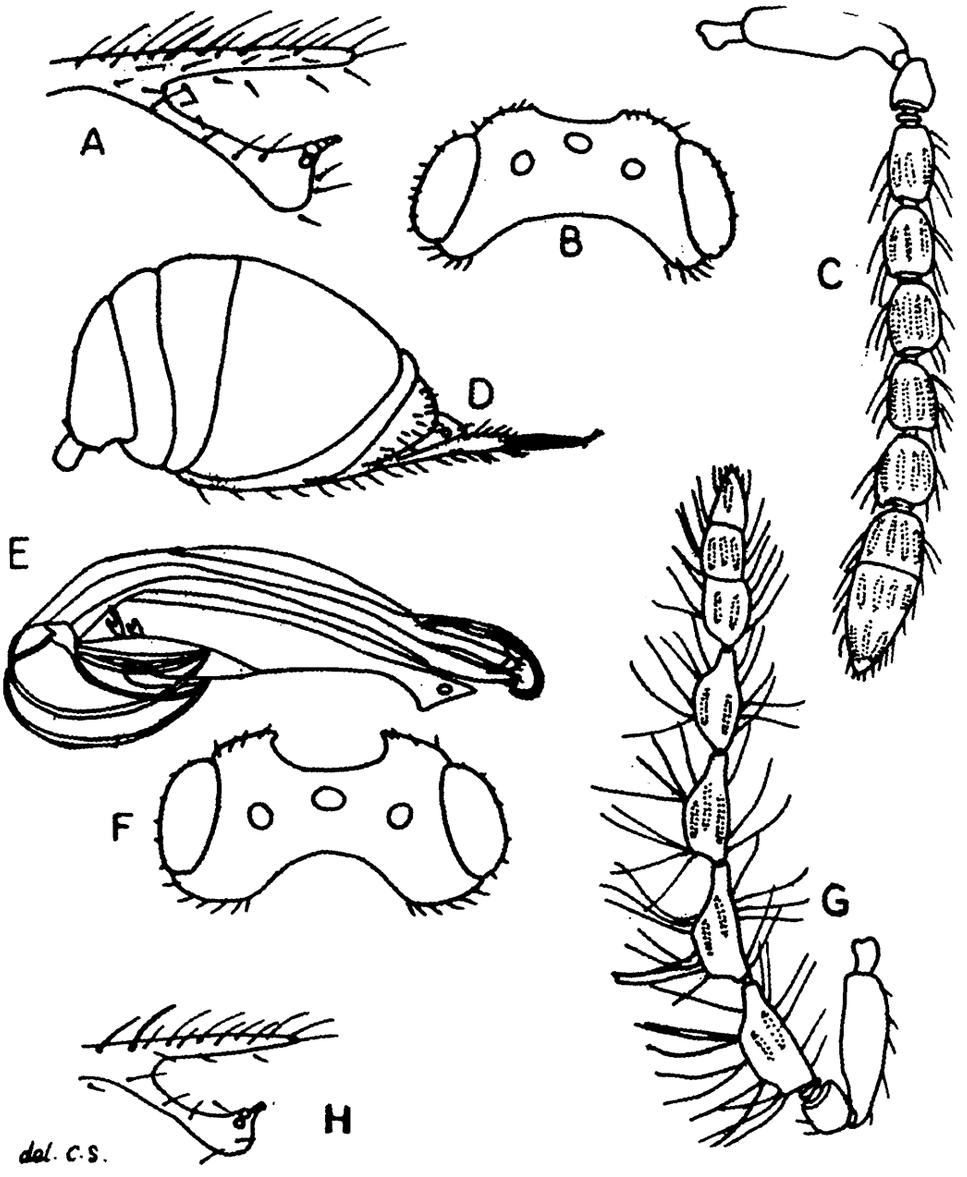

FIG. 120. *Eurytoma karnatakensis* Mukerjee : A-E. Female : A. Stigmal area of fore wing; B. Head in dorsal view; C. Antenna; D. Abdomen; E. Genitalia; F-H. Male : F. Head in dorsal view; G. Antenna; H. Stigmal area of fore wing.

Male : Length 1.84 mm. Body black; eyes and ocelli brown; mandibles red; otherwise as in female.

Head punctate as in female; viewed above very slightly wider than thorax; ocellocular space about 1.60 times the ocellar diameter; interocellar space about 3 times and the front ocellar space about

0.85 of the ocellar diameter; antennae with 10 segments : 1.1.1.4.3; scape stout, short, about 3.33 times as long as thick; pedicel about 0.25 of scape and subglobose; funicular segments produced apically into long stems; segments 1-3 subequal; fourth segment about 0.85 of the third segment; club subequal to the preceding 1.70 funicular segments combined, with the segments well articulated, first segment about 0.66 of the fourth funicular segment, second segment about 0.87 of the first, terminal segment conical, obtusely pointed.

Thorax sculpture as in female; fore wing about 2 times as long as wide; vein *sm* with 11 setae, veins *m* and *pm* with 14 setae; otherwise as in female; hind coxae about 1.37 times as long as thick; femora about 1.81 times coxae and 3.63 times as long as thick; tibiae as in female, with 2 long spines above near base as in female; shorter spur about 0.50 of the longer spur, which latter is bout 0.60 of metatarsus; tarsus about 0.90 of tibiae; metatarsus abut 0.30 of tarsus.

Abdomen smooth; petiole matt; about 0.40 of body; petiole subequal to hind coxae; third tergite longest; aedeagus very slightly exserted.

Type locality : Hogenakal

Distribution : Thirupathi Hills (Eastern Ghats)

Eurytoma hindupurensis Gahan

1919 *Eurytoma hindupurensis,* Gahan, *Proc. US nat. Mus.,* 56 (2299) : 518.

1921 *Eurytoma hindupurensis,* Ramakrishna Ayyar, *Rep. Proc. IV ent. Meet. Pusa,* 364.

1938 *Eurytoma hindupurensis,* Mani, *Cat. Indian Ins.,* 23 : 70.

Female : Length 2.50 mm. Body black; antennae black; fore tibiae and all tarsi testaceous; middle and hind tibiae dark brown with pale tips; abdomen black above and somewhat piceous below.

Head with sparse and indistinct umbilicate punctae on vertex; frons below scrobes and orbit longitudinally reticulate, with fine striae converging to clypeus; genal carina present; occiput with shallow punctae; scape constricted apically; pedicel hardly longer than thick and less than 0.50 of the first funicular segment; funicular segments submoniliform, thicker than pedicel; first funicular segment slightly longer than thick, remaining segments nearly as long as thick; club distinctly triarticulate, conic-ovate, slightly longer the preceding 2 segments combined.

Thorax umbilicately punctate; scutellum smooth at the sides; propodeum rugusopunctate at the sides, with deep and broad median depression not bounded by carinae and finely reticulate punctate medially; fore coxae beneath excavate from base to tip, without tooth; fore wing with veins *m* and *pm* subequal and distinctly longer than *st*.

Abdomen shiny, strongly compressed, with the fourth tergite not more than 0.50 of the third, tergites 2 and 3 subequal, large, with the sides finely punctate, sides of the fourth tergite also punctate; stylus prominent.

Type locality : Hindupur (Ananthapur Dist.)

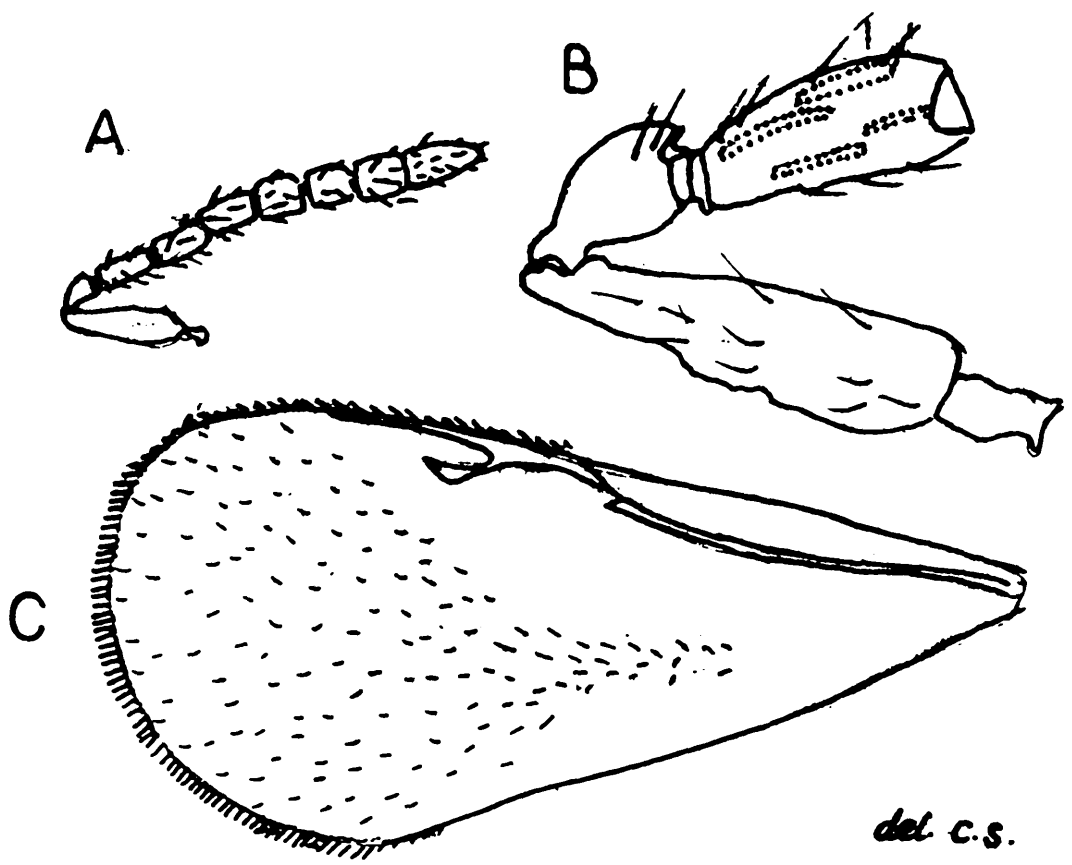

FIG. 121. *Eurytoma tatipakensis* Kurian, female : A. Antenna; B. Basal segments of antenna; C. Fore wing.

Eurytoma tatipakensis Kurian

(Fig. 121)

1954 *Eurytoma tatipakensis,* Kurian, *Agra Univ. J. Res. (Sci.),* 3 : (1) 119.

Female : Length 2.10 mm. Body brownish-black; head black; ocelli reddish-brown; vertex distinctly roughly rugosely punctate, with short, stiff, silvery-brown bristles; eyes dark brown, bare; mandibles dark reddish-brown; antenna reddish-brown, with short, somewhat thick, silvery-white pubescence; thorax punctae large and deep, with short, silvery-white pubescence; propodeum laterally rugosely sculptured, with silvery-white pubescence; legs reddish-brown; coxae darker and nearly of the same colour as the body.

Head viewed from above length slightly less than 0.33 of the width; interorbital distance 0.60 of the width of the head; postorbital space very slightly less than 0.33 of the width of eye; ocelli arranged

in a broad triangle; interocellar distance 3 times the ocellocular, which latter is 0.80 of the front ocellar; vertex viewed in front length 0.75 of the width of the head; interorbital distance somewhat less than 0.75 of the width of the head; postorbital 0.14 of the length of eye, which latter is 2 times the length of gena; frons and face rugosely sculptured, punctures broad and irregular, covered over by silvery-white pubescence; clypeus truncate; scrobes deep and distinct, stopping a little away from the anterior ocellus; antennae inserted on the middle of face, above an imaginary line joining the lower orbital borders; 10 segmented; 1.1.1.5.2; scape 3 times the pedicel; pedicel 5 times the annellus; first funicular 0.50 of the scape and 1.50 times the pedicel; second and remaining funicular segments gradually become shorter until the last funicular is 0.40 of the scape and is equal to pedicel and annellus combined; first segment of club equal to pedicel; second slightly less than 2 times the first; both the club segments together very slightly less than the scape.

Thorax length 1.67 times the width at the region of the tegulae; pronotum anteriorly narrowing into a sort of neck, posteriorly nearly as broad as mesonotum, anterior region transversely coriaceously sculptured, posteriorly rugosely sculptured; mesonotum very slightly longer than pronotum, sculpture same as the latter; parapsidal furrows deep, complete; mesopleura divided by a carina into 2 areas, anterior area smooth, posterior rugoso-reticulately sculptured; scutellum 1.25 times the mesonotum, sculpture same as that of the latter; metanotum, nearly covered over by the backwardly projecting scutellum, nearly smooth and shiny; propodeum slightly less than the scutellum, depressed medially, with a median longitudinal carina anteriorly, which disappear posteriorly, nearly smooth and shiny except for faint irregularly reticulate sculpture; propodeal spiracles small and oval; hind coxa 3 times the trochanter; femur nearly 1.50 times the coxa and trochanter combined; tibia somewhat longer than the femur; tibial spurs larger 0.16 of the tibia and smaller 0.50 of the larger; metatarsus 0.25 of tibia and 0.50 of the the rest of tarsi combined; fore wing length slightly over 2 times the breadth; vein *sm* 4 times the *m,* which latter is equal to *pm; st* 0.75 of the *pm.*

Abdomen 0.83 of thorax, somewhat laterally compressed; tergites 5 visible; first tergite subequal to fourth and much larger than the rest; second and third tergites slightly less than 0.50 of the fourth; fifth the smallest; ovipositor well exserted, from its apex up to the base of the ovipositor sheath nearly 0.20 of the whole length of abdomen, including the sheath ploughshate-shaped.

Type locality : Coorg

Host : Natada nararia

This species runs close to *Eurytoma pallidiscapus* Cameron from which it differs in having colour brownish-black, with short, stiff, silvery-brown bristles; vertex distinctly, roughtly and rugosely

punctate; mesonotum rugosely sculptured, without a long, smooth, shiny, triangular space; propodeum with a singly median longitudinal carina and vein *st* being only 0.75 of the *pm*.

SPECIES INCERTAE SEDIS

Eurytoma albitarsis Motschulsky

1863 *Eurytoma albitarsis,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 : 41.

Female : Length 3.25 mm.

"Elongata, subangustata, nitida, antice crebre rugossopunctata postice glabra, attenuata, nigra, tarsis albidis, geniculis tibiarumque apice rugo-testaceous; capite depresso, triangulare, grosso-granuloso-punctatto, postice profundo sinuato, face excavato, vertex angustato, ocellis subapproximais, nitidis, nigris, oculis mediocris, subrotundalis, paulo promlulis, grieis, antennis thorace longioribus, oblongo-moniliformibus; thorace cicatricosa-punctate, elongato, pronote subcylindrico, medio trianguliter impresso, mesonoto semilunato, medio unispinoso, metanoto subquadrato, transversim rugoso; alis unicoloribus, subalibidis, vena stigmatica infusctato abdomine elongato-triangulare, compresso, apice anttenua-toaculeato, segmento 4-o brivissima, 3-o antice et subtus subtilissime punctulate femoribus clavalis, nonincrasalis."

Type locality : Mt. Nuwara Elliya (Ceylon)

Eurytoma angustula Motschulsky

1863 *Eurytoma angustula,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 43.
1909 *Eurytoma angustula,* Schmiedeknecht, *Gen. Ins.,* 97 : 140.
1938 *Eurytoma angustula,* Mani, *Cat. Indian Ins.,* 23 : 69.

Female : Length 2.00 mm.

"Elongata, angutata, antice ruguso-punctata, postice nitida, nigra, axillis pedibusque pallido-testaceis; capite subrotunda, postice vix excavato, ocellis vix distinctis, oculis mediocris, subrotundalis, apulo prominulis, antennis thorace vix brevioribus, oblongo-submoniliformibus, articulo 3-o secundo vix longiori; thorace capite angustiore, elongato, subattenuato, pronoto subgibboso, vix profundo rugosopunctato, utrinque impresso, segmentis convexis, mesonoto arcuato-triangulari, convexo, distincto cicatricoso-punctato, metanoto obtuso, occulto; abdomine glabro, elongato subovato, apice attenuato; femoribus vix clavatis."

Type locality : Summit of Mt. Patannas (Ceylon)

Eurytoma contraria Walker

1860 *Eurytoma contraria,* Walker, *Ann. Mag. nat. Hist.,* 46 : 358.
1909 *Eurytoma contraria,* Schmiedeknecht, *Gen. Ins.,* 97 : 41.
1938 *Eurytoma contraria,* Mani, *Cat. Indian Ins.,* 23 : 69.

"Mas. Nigra, rude punctata, antennis moniliformis, thorace robusto, petiolo longiusculo, abdomine glabro parvo subcompresso, genubus tibiis apice tarsisque flavis, alis albis, venis pallide flavis."

"*Male :* Black, roughly punctured; head not broader than the thorax; antennae moniliform, not longer than the thorax; joints elongate, petiolated; thorax very robust; petiole rather long; abdomen smooth, shining, slightly compressed, not more than half the length of the breadth of the thorax; knees, tarsi, and tips of tibiae yellow; wings white; veins pale yellow; length of the body 1¼ line; of the wings 2 lines"

Type locality : Ceylon

Eurytoma (?) **gracilis** Motschulsky

1863 *Eurytoma gracilis,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 42.
1938 *Eurytoma gracilis,* Mani, *Cat. Indian Ins.,* 23 : 70.

Length about 1.00 mm.

"Suboblongato, convexo, antice granuloto-punctato, postice nitidissima, nigra, geniculis tarsique alibidis, alis hyalinis, vena stigmatica fusco-testacea; capite ut in priori oculis cix prominulis, antennis thorace vix longioribus, articulis submoniliformibus, ere transversis, ultimo precedente triplo longiori, elongato-conico, 3-o secundo non longiori; thorace ut in priori; abdomine glabro, convexo, ovato, subcompresso, apice aculato, segmento 2-do latissimo. Femoribus simpliciter clavalis non incrassalis."

Type locality : Ceylon

Eurytoma maculipes Motschulsky

1863 *Eurtoma maculipes,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 41.
1938 *Eurytoma maculipes,* Mani, *Cat. Indian Ins.,* 23 : 70.

Length 3.25 mm.

"Elongato, subglobosa, antice granulato-punctatto, postice nitida, nigra, geniculis, tibiarum apice tarsique subalibidopallidis antennarum scapo, articulo 2-do, tibislis anticis, trasique uniguiculis fusco-testaceis; capite lato, depresso, rugoso-punctato, postice sinuato, ocellis nitidis, nigris fere in lineam transversam postice, oculis rotundalis, subprominulis, antennis thorace longioribus, oblongo-moniliformibus, articulo secundo brevi, subgloboso, 3-o fere triplo longiori, ovato, sequentibus tertio paulo brevioribus; thorace capite paulo angustiore, subelongato, potice subattenuato, cicatricolo-punctato, pronoto medio triangulariter impresso, segmentis convexis, mesonoto subrotundatto, valde convexo, postice obtuso, metanoto rugoso, medio claviforme sulcato, postice rotundato; alis fere hyalinis, vena stigmatica fusca; abdomine ovato, apice acuminato, glabro, postice aregeneo pilosso, segmentis 1.3 et 4-o latioribus; femoribus clavalis, non incrasstis."

Type localitv : Ceylon

Eurytoma pigra (Motschulsky)

1863 *Decatoma pigra,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 43.
1938 *Decatoma pigra,* Mani, *Cat. Indian Ins.,* 23 : 68.

Length 3.75 mm. "Subelongate, fortier punctata, subopaca, nigro, abdomine nitido, axillis, geniculis tarsique piceis; capite depresso, rugoso-punctato, postice subconvexo, facie excavato, vertice compresso, marginato, ocellis nitidis, nigris, oculis maginis, rotundalis, antice prominulis, antennis thorace paulo longiorbibus, solidis, articulis elongatis, cylindricis; thorace capite fere angustiore, subelongato, convexo, cicatricosopunctato, pronoto subquadrato, cylindrico, medio subpentagono impresso, antice oblique truncato, marginato, margine subtuberculato, lateribus medio subcoarctalis, mesonoto subovato, subconvexo, cicatricoso-punctato, apice obtuso; alis subhyalinis, anticis in medio bifasciatim dilute-infumatis, vena stigmatica picea; abdomine thorace angustiore, elongato conico, postice cinereo pilosello; femoribus posticis subincrassatis."

Type locality : Summit of Mt. Patannas (Ceylon)

Eurytoma sulcata Kieffer

1905 *Eurytoma sulcata,* Kieffer, *Ann. Soc. Sci. Bruxelles,* 29 (2) : 192.
1938 *Eurytoma sulcata,* Mani, *Cat. Indian Ins.,* 23 : 71.

"Antennes de la femalle a articles du funicule plus longs que gros, les trois premiers deux fois aussi longs que gros, le quatrieme et le cinquieme presque deux fois, le sixieme de moitie plus long que gros, le septieme double du sixieme et forme par la reunion de deux articles, comme indique la dent interne large et obtuse. Nervure stigmatique distinctement plus courte que la nervure marginale; ailes inferieures avec trois crochets frenaux. Metanotum traverse dans toute sa longueur par un large sillon median. Tibias posterieurs sans longues soies. Queue pas plus longue que grosse. Noir; pattes junes, saufles hanches ainsi que les femurs posterieurs. Taille female : 2, 3 millim.

Moeurs. Parasite dun Cynipide. Obtenu des galles de *Quercus pachyphylla* Decrites plus haut."

Type locality : North Bengal

Host : Cyripid on gall of *Quercus pachyphylla*

Eurytoma taprobanica Westwood

1882 *Eurytoma taprobanica,* Westwood, *Trans. ent. Soc. London,* 327.
1938 *Eurytoma taprobanica,* Mani, *Cat. Indian Ins.,* 23 : 71.

Type locality : Kandy : Ceylon

Host : In gall on *Ficus teila*

*Eurytoma indefensa Walker

1860 *Eurytoma indefensa,* Walker, *Ann. Mag. Nat. Hist.,* 6 : 358.

"Foem, Nigra, conferte punctata, capite magno, antennis subclavatis, scapo luteo, abdomine glabro longi-elliptico, pedibus fulvis, femoribus tibiisque posterioribus nigro latissime faciatis, tarsis flavescente-albis, alis fuscescentibus.

Female : Black, thickly punctured. Head broader than the thorax; antennae subclavate, not longer than the thorax; scape luteous; abdomen elongato-eliptical, smooth, shining, narrower but longer than the thorax; first segment occupying nearly the hole surface; oviduct extending a little beyond the tip; legs tawny; each femur and posterior tibia with a very broad black band; tarsi yellowish white; wings brownish, rather broad; veins black. Length of the body 1 line; of the wing 1½ line."

Type locality : Ceylon

Bruchophagus Ashmead

1888 *Bruchophagus,* Ashmead, *Ent. Amer.,* 4 : 42.
1888 *Systolodes,* Ashmead, *Ent. Amer.,* 4 : 42.
1894 *Bruchophagus,* Ashmead, *Trans. Amer. ent. Soc.,* 21 : 328.
1894 *Systolodes,* Ashmead, *Trans. Amer. ent. Soc.,* 21 : 320.
1904 *Bruchophagus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 262, 263.
1909 *Bruchophagus,* Schmiedeknecht, *Gen. Ins.,* 97 : 146.
1938 *Bruchophagus,* Mani, *Cat. Indian Ins.,* 23 : 72.
1954 *Bruchophagus,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 30 : 76.
1954 *Bruchophagus,* Fedoseeva, *Mosk. Univ. Vestn.,* 9 (5) : 113.
1958 *Bruchophagus,* Fedoseeva, *Zool. Zhur.,* 37 : 1345.
1961 *Bruchophagus,* Claridge, *Trans. Soc. Brit. Ent.,* 14 : 178.
1978 *Bruchophagus,* Zerova, *Faun. Ukr. Akad. Nauk.,* 2 (9) : 369.
1977 *Bruchophagus,* de Santis, *Inst. Nac. Tec. Agr. Pub. Tec.,* 17.
1979 *Bruchophagus,* Krombein *et al.,* Hymen. N. America, 1 : 849.

Abdomen oval, compressed, apically conically produced into a style; fourth and fifth tergites short, but a little longer than the others; funicle with 4 segments, in male constricted apically into stems and with long hairs; petiole short, stout.

Type-species : Bruchophagus borealis Ashmead

KEY TO SPECIES

1. First funicular segment subequal to pedicel; body black; club subequal to the preceding 3 segments combined	*B. mellipes* Gahan
First funicular segment longer than pedicel; body yellowish-brown; club equal to the preceding 2.50 segments combined	*B. ollenbachi* Mani & Kaul

* *Vide plutarchia indefensa* (Walk.) on p. 434.

Bruchophagus mellipes Gahan

1919 *Bruchophagus mellipes,* Gahan, *Proc. US Nat. Mus.,* 56 (2299) : 513.
1921 *Bruchophagus mellipes,* Ramakrishna Ayyar, *Rep. Proc. IV ent. Pusa,* 364.
1938 *Bruchophagus mellipes,* Mani, *Cat. Indian Ins.,* 23 : 72.

Female : Length 2.40 mm. Body opaque-black; scape reddish-testaceous; flagellum brownish-testaceous; legs except coxae and basal 0.50 of fore and hind femora, reddish-testaceous; coxae black; fore and hind femora brown to black basally; ovipositor pale testaceous; wings hyaline.

Head strongly umbilicately punctate; antennae short; first funicular segment a little longer than thick and subequal to pedicel, but thicker; following funicular segments slightly transverse; club almost equal to the preceding 3 segments combined, triarticulate; clypeus with a slight median longitudinal carina below the insertion of antennae, without punctae; thorax umbilicately punctate; propodeum strongly declivous, rugoso-punctate at the sides with a large slightly impressed coarsely irregularly and longitudinally rugose median area bounded in front and at the sides by carinae, the lateral carinae converging behind; fore wing with vein *m* subequal to *st,* somewhat thickened, vein *pm* distinctly longer than m; abdomen conic-ovate, not compressed, tergite 3 largest, nearly 2 times the second; tergites 2 and 4 subequal; tergite 4 reticulate medially; rest of abdomen shiny; ovipositor short.

Type locality : Coimbatore

Host : Reared from seeds of *Sesbania aculeata*

Bruchophagus ollenbachi Mani & Kaul

1974 *Bruchophagus ollenbachi,* Mani & Kaul, *Mem. School Ent.,* 3 : 55.

Female : Length 4.00 mm. Body brown; head and thorax deep yellowish-brown; legs light yellowish-brown; abdomen dark brown; clypeus black; body with black markings; occiput, ocellar triangle, pronotum with median quadrate band extending from the front to hind margin, 2 oval submarginal oblique spots laterally and separated from the median band by 2 times their width; scutum except for a narrow line along the parapsidal furrows, scapula except postero-laterally; scutellum with median, broad, almost complete band, about 0.30 times as wide as long; propodeum narrowly in front margin and in the middle impressed area; petiole, first tergite posteriorly; second tergite in the middle and posterior 0.50; third tergite a median broadly triangular area continued behind at the sides along the hind margin; fourth tergite in the middle triangular area and fifth tergite in the posterior 0.50 black; scape yellowish-brown except the dark brown tip; pedicel dark brown at base; rest of antennae brown; eyes and ocelli reddish-brown; wings hyaline; veins brown.

Head viewed above about 2 times as wide as long, closely umbilicately punctate; ocellocular space about 2.60 times ocellar diameter; interocellar space equal to about 2 ocellar diameters; front ocellar space equal to ocellar diameter; occiput gradually sloping behind; head viewed in front width to length 100 : 70, closely umbilicately punctate; front ocellus just outside the scrobe; scrobe deep, wide, smooth; clypeus deeply incised in the middle in front; head viewed laterally height to thickness 100 : 73; antennae inserted a little above the lower orbital border, with 11 segments : 1.1.1.5.3; scape about 4 times as long as thick, reaching front ocellus; pedicel about 0.33 of scape; annellus about 2 times as wide as long; first funicular segment longest, about 0.50 of scape and about 1.50 times pedicel; second segment a little shorter, bout subequal to the third and fourth segments; fifth segment distinctly shorter; club equal to the 2.50 preceding segments combined.

Thorax distinctly narrower than head, closely umbilicately punctate; pronotum : mesonotum : scutellum ratio 75 : 100 : 80; parapsidal furrows complete; scutellum width to length 100 : 80; propodeum about 2 times as wide as long, middle impressed area finely reticulate, sides rugose; fore wing about 2 times as long as wide; veins *sm* : *m* : *st* : *pm* ratio 680 : 100 : 100 : 130; hind femora about 3 times as long as thick; tibia a little longer than femora, with a regular series of 10 spines externally; tibial spur single and about 0.14 of tibia.

Abdomen moderately compressed, petiole short, about 0.50 of body; viewed above about 2.50 times as long as thick, ovately conical; third tergite about 2 times the second; fourth tergite equal to the second and third combined; viewed laterally a little over 1.50 times as long as high.

Type locality : Mussoorie (Garhwal Himalaya)

Species Incertae Sedis

Aximopsis sp. Ramakrishna Ayyar, *Spol. Zeyl.*, 13 : 244.

Eurytoma mitsakura Ashmead, Var. Nov. (innominata) In : Ramakrishna Ayyar, *Spol. Zeyl.*, 13 : 244 (1925).

Eurytoma pigra (?) *Girault* (Nom. Nud.). In : Ramakrishna Ayyar, *Rep. Proc. III. ent. Meet. Pusa,* 1 : 321.

Decatomella indica Masi. In the collections of the Zoological Survey of India, Calcutta, there are specimens, bearing this name in the handwriting of L. Masi; but the name and description of the species are not to be traced in literature.

SUBFAMILY RILEYINAE

1904 *Rileyini,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 263.

1909 *Rileyini,* Schmiedeknecht, *Gen. Ins.*, 97 :

*KEY TO TRIBES

1. Antennae with 2 annelli; hind femora in male swollen .. *Rileyini*

   Antennae with a single annellus or sometimes all segments beyond pedicel transverse and like annelli; hind femora in male not swollen 2

2. Antennae with a single annellus; scutellum not produced behind into a blunt spine or basal lamella *Buresiini*

   Antennae with several funicular segments modified like annelli; scutellum produced behind into a blunt spine or with basal lamina *Heimbrini*

FAMILY PERILAMPIDAE

1846 *Eucharidae* (partim), Walker, *List Chalcids Brit. Mus.*, 1 : 103.
1856 *Perilampoidae,* Förster, *Hym. Stud.*, 2 : 19, 22, 46.
1875 *Perilampina,* Thomson, *Hym. Skand.*, 4 : 11 : 22.
1886 *Perilampinae,* Howard, *Ent. Amer.*, 1 : 198.
1897 *Perilampidae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 245.
1904 *Perilampidae,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 265.
1909 *Perilampinae,* Schmiedeknecht, *Gen. Ins.*, 97 : 81.
1914 *Perilampidae,* Crawford, *Proc. ent. Soc. Washington,* 16 : 69-76.
1915 *Perilampidae,* Girault, *Mem. Queensland Mus.*, 3 : 308.
1924 *Perilampidae,* Ruschka, *Deutsch. ent. Z.*, 82.
1938 *Perilampidae,* Mani, *Cat. Indian Ins.*, 23 : 72.
1956 *Perilampidae,* Boucek, *Acta Faun. ent. Mus. Pragae,* 1 : 83.

This family is a well defined and distinct group, but different authors like Schmiedeknecht (1909), Rick (1966), Boucek (1978) and others have treated them as a subfamily of the Pteromalidae. The Philomidini and Chrysolampini are grouped together under the Perilampinae, but Boucek believes that Philomidini belong to the Eucharitidae and Chrysolampini, though very close to the Perilampids, are also placed by him under the Pteromalidae. From the Eucharitidae the family is separated by the pronotum being visible dorsally, by the simple scutellum and by the nonfalcate mandibles.

The North American *Eutrichosoma* and *Perilampus laevis* are closely related and Boucek's subfamily Eutrichosomatinae for Timberlake's MS family Eutrichosomatidae, though placed under the family Pteromalidae, should be considered as truly closer to the Perilampidae than Pteromalidae. *Perilampus laevis* Prov. is cited as type of the genus *Peckianus* Boucek under Eutrichosomatinae.

The family is characterized as follows :

This family is closely related to the Eucharitidae, but can be readily distinguished by well marked characters : Body often metallic coloured, sometimes shiny black; closely rugosely punctate; head

* No species reported from India.

transverse with smooth frons and deep scrobes; eyes large; mandibles not sickle-shaped; antennae with 13 segments : 1.1.1.7.3; or rarely also 1.1.1.7.1; scape much longer than the first funicular segment and also longer than thick; flagellum not branched; thorax not gibbous; pronotum short, as wide as mesonotum and distinctly visible from above; prepectus triangular and fused with the mesonotum; scutellum not greatly produced behind and not forked, at the most somewhat bluntly spined behind; axillae separate; hind tibia with 2 apical spurs; parapsidal furrows complete; middle tibial spur short; tarsi simple; abdomen in female triquetral; differentiated by a sharp edge into a dorsal short collar from the steep vertically descending excavate collum in front; first and second tergites occupying most of the dorsum of abdomen; third and fourth tergites small; hypopygium not prominent; hind coxae not much longer than the fore coxae, usually subequal or even smaller; vein *st* oblique, *pm* distinct; hind tibial spurs double.

KEY TO GENERA

1. Face with a well developed median horn-like process in front of the antennal sockets; antennae fold back into the deeply excavate scrobes, which are massively carinately margined, at least above; vein *pm* shorter than *m*. *Monacon* Waterston

   Face without horn-like process; other characters generally not as described above.. 2

2. Prepectus as wide as pronotum; pronotal collar narrow, with not more than 3 rows of punctae in the middle; scutellum not strongly produced to overhang the propodeum, but when thus produced, then with carinate margin; vein *m* longer than *pm* .. 3

   Prepectus reduced to a narrow triangle; collar strongly developed, with at least 5 rows of punctae; scrobes carinately bordered; head striate in part; scutellum overhanging propodeum; vein *m* often short. 5

3. Abdomen petiolate (North American). *Burksilampus* Boucek

   Abdomen sessile or subsessile. 4

4. Collar in the middle with a pair of transverse elevations; ovipositor sheath upturned (North American). *Steffanolampus* Perk

   Collar without paired elevations; ovipositor concealed or at least never upturned. *Perilampus Latr.*

5. Scutellar margin with crenulated and carinate rim; vein *m* much shorter than *pm* and only about 2 times *st;* second tergite usually much shorter than the first. *Euperilampus* Walker

   Scutellar margin simple; vein *m* distinctly longer than *pm* and more than 3 times *st;* second tergite equal to the first. *Krombeinius* Boucek

Ashmead includes also *Sericopus* Kriechb., *Philomides* Haliday, *Chrysomalla* Forst., *Aperilampus* Walker, *Chrysolampus* Spinola and *Elatus* Walker

Monacon Waterston

1922 *Monacon,* Waterston, *Indian forest Rec.,* 9 (2) : 24.
1938 *Monacon,* Mani, *Cat. Indian Ins.,* 23 :
1968 *Monacon,* Hedqvist, *Ent. Meded.,* 36 : 156.

Antennae with 13 or 14 segments; scape slender, slightly flattened apically; pedicel globose; annellus narrow; funicle stout, with segments transverse, gradually becoming thicker apically; club pointed; mandibles with 3 long acute teeth on the right, and 2 teeth in the left; labrum deeply cleft; palpi long, slender; scrobe impression V-shaped, deep, usually with or rarely without carina; forns with a distinct hornlike spine directed forwards and downwards; fore wing with vein *sm* long, *m* and *st; pm* not longer than *st;* legs slender; fore tibial spur pre-apical; hind tibial spurs double, unequal; middle metatarsus more than 2 times the second; petiole short; first tergite smooth, with a depression in the middle behind, on either side of it, with an elevated boss; second tergite produced to meet the impression of the first; ovipositor weak.

Type species : *Monacon productum* Waterston.

KEY TO SPECIES

(Modified from Hedqvist, *Ent. Meded.,* 36 : 156, 1968)

1. Vein *m* 3 times as long as *st;* fore wing devoid of discal ciliation basally.	2
Vein *m* 2 times as long as *st;* basal part of fore wing with scattered short setae.	3
2. Facial process slender, acuminate, somewhat decurved; body about 3.00 mm long.	*Monacon productum* Waterston
Facial process short, truncate, somewhat concave apically; clypeal sulci above with small prominence at the sides; body size 2.60 mm.	*Monacon abruptum* Waterston
Prominence absent in clypeal sulci.	*Monacon productum* Waterston
3. Face sparsely punctate; facial process compressed, acuminate	*Monacon spinifrons* (Cameron)
Face finely reticulate; facial process truncate and with concavity at tip.	*Monacon ferrieri* Baltz.

Monacon productum Waterston

(Fig. 122)

1922 *Monacon productum,* Waterston, *Indian forest Rec.,* 9 (2) : 25.

Female : Length 3.20 mm. Body black, with metallic blue-black reflections on head and thorax; antennae blackish-brown; wings hyaline, faintly brown; coxae black; femora blackish-brown.

Head much wider than long in the ratio of 3 : 2; interorbital space about 0.60 width of head; face deeply excavate, with a stout process, and curved behind; surface of head dull shiny with occiput striate; vertex more irregularly striate; scape about 6 times as long as thick, slightly more than pedicel, annellus and first 4 funicular segments combined; pedicel about 1.40 times as long as thick, and little over 0.25 of scape; funicular segments from 2 onwards subequal; first funicular segment more slender than others; club about 2 times as long as thick; conical; labrum with 12 flat, setigerous processes; mandible yellowish-brown; maxillary palpi more than 2 times as long as labial palpi, with the segments ratio 6 : 5 : 4 : 10; labial palpi segment ratio 4 : 2 : 5; pronotum narrow, acutely margined; scutellum longer than scutum; overhanging metanotum; thorax closely umbilicately punctate, except the sides of scutellum smooth; propodeum with a median longitudinal carina, giving off 3-4 short branches; mesopleura smooth; fore wing a little more than 2 times as long as wide; veins *sm : m : st : pm* ratio 9 : 3 : 1 : 1; fore tibia about 6 times as long as thick; middle tibia about 8 times as long as thick; fore tibia with 4 spines between the spur and tip and 3 spines at apex; middle femur near tip with 2-3 spines; tibial spur shorter than metatarsus.

Abdomen swollen behind, first tergite at its shortest and the second tergite at its longest subequal; the 2 tergites together covering more than 0.50 of the dorsum.

Male : Length 3.00 mm. Resembles female, but differs in the propodeum sculpture.

Type locality : Jalpaiguri : N. Bengal

Host : Diapus furtivus defoliating *Shorea robusta*

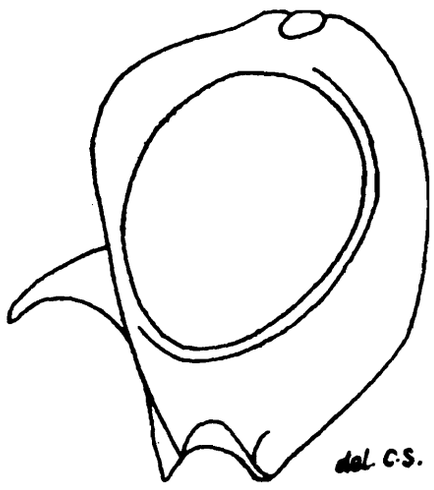

FIG. 122. *Monacon productum* Waterston, female, head profile view.

Monacon abruptum Waterston

1922 *Monacon abruptum,* Waterston, *Indian forest Rec.,* 9 (2) : 29.

Female : Length 2.60 mm. This species is similar to *Monacon productum,* Waterston, but differs in the darker femora and body size; facial impression wide, not margined; scape about 5 times as long as thick and a little shorter than in *M. productum;* pedicel subglobose; club about 0.60 of scape; labrum with 8 marginal digits, not deeply cleft medially; maxillary palpal segmental ratio 30 : 21 : 18 : 40; thorax coarsely punctate; fore wing slightly more than 2 times as long as wide; venation proportion as in *M. productum,* but *st* a little longer and *pm* a little shorter; median keel of propodeum extending only upto the swelling, then dividing to enclose a pentagonal cell.

Type locality : Bengal : Sunderbans

Host : Platypus uncinatus Blandf. attacking *Heritiera fomes* Buck.

Perilampus Latreille

1809 *Perilampus,* Latreille, *Gen. Crust. Ins.,* 4 : 30.
1817 *Cinipsillum,* Lamarck, *Hist. nat. Anim. sans Vert.,* 4 : 156.
1845 *Cynipsillum,* Agassiz, *Nomencl. Zool. Index Univ.,* 325.
1904 *Perilampus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 266.
1909 *Perilampus,* Schmiedeknecht, *Gen. Ins.,* 97 : 83.
1912 *Perilampus,* Smith, *US Depart. Agric. Bur. Ent. Tech. Ser.,* 19 : 33-69.
1936 *Perilampus,* Smilyan, *Proc. US nat. Mus.,* 83 (2990) : 369-412.
1938 *Perilampus,* Mani, *Cat. Indian Ins.,* 23 : 73.
1952 *Perilampus,* Steffan, *Bull. Soc. ent. Fr.,* 57 : 68-74.
1962 *Perilampus,* Baltazar, *Philip. J. Sc.,* 90 : 221-222.
1968 *Perilampus,* Hedqvist, *Ent. Medd.,* 36 : 158.
1979 *Perilampus,* Krombein *et al.,* Hymen. N. America, 1 : 770.

Abdomen subsessile or sessile; scutellum though large never produced behind into a spine; thorax coarsely punctate; antennae with 13 segments : flagellum not excessively short though subclavate.

Type-species : Diplolepis violacea Fabricius. Desig. by Latreille.

KEY TO SPECIES

1. Prepectus confluent with pronotum anteriorly — 2
   Prepectus well separated anteriorly from pronotum — 3
2. Inner orbital carina present, but no trace of it behind front ocellus; body black; legs black; tibial tips and tarsi brown; length 2.70 mm — *P. yercaudensis* Mani & Kaul
   No carina at inner orbits, trace of it behind front ocellus; head smooth, with striae only on occiput and behind cheek; body black,

without metallic shine; antennae brown above, red below from the fifth or sixth segment; also more or less reddish above or almost quite black; scape and pedicel always black; wings hyaline; legs black; with some bluish or greenish shine in the middle of hind femora and tibiae; front tibiae yellow, except at base, middle and hind tibiae yellow only at extreme tip; tarsi yellow; in male middle and hind tibiae brownish-black externally and broadly yellow at tip and internally; length of female 1.70-3.00 mm. male 1.50-2.00 mm. — *P. microgastris* Ferrière

No trace of a carina behind front ocellus; vein *m* nearly 3 times *st,* the latter shorter than *pm;* clypeus and prepectus black, thorax with tint of bronze; funicular segments, mandibles reddish-brown; tibiae and tarsi distally pale yellowish-brown; veins pale yellowish-brown; length 3.50 mm — *P. peterseni* Hedqvist

Inner orbital carina absent; no carina behind front ocellus; *m* : *pm* : *st* ratio 100 : 60 : 40; tibiae brownish-black; tarsi brown — *P. shencottus* Mani & Kaul

3. A carina along inner orbital border and behind front ocellus — 6

No carina along inner orbital border and behind front ocellus; sometimes trace behind front ocellus — 4

4. Head without white hairs, but with scattered, shallow punctae on face; malar space smooth; abdomen basally opaque, covered with small punctae; head and thorax dark metallic-green, abdomen blue-black, tarsi pale; length 3.75 mm — *P. orientalis* Rohwer

Head with white hairs, entirely smooth; malar space striate basally — 5

5. Funicular segments and tarsi rufo-testaceous — *P. megalaspis* Cameron

Funicular segments and tarsi black; length 3.00 mm .. — *P. cremastophagus* Mani & Kaul

Funicle black, tarsi brown; length 4.50 mm — *P. nilamburensis* Mani & Kaul

6. Abdomen opaque, covered with small punctae basally — 7

Abdomen smooth, shining basally — 8

7. Clypeus rounded in front shallow, scattered punctae over; vertex with same punctae; prepectus, head and thorax obscurely greenish, mesoscutum almost black, abdomen black, legs green, tarsi testaceous. Length 3.50 mm .. — *P. punctiventris* Crawford

Clypeus strongly sinuated with shallow, scattered punctae only near front margin; vertex smooth, clypeus and prepectus bright green; tarsi ferruginous, wing veins brown; length 4.00 mm — *P. singaporensis* Rohwer

	Clypeus straight in front margin; distinctly more punctate in front than behind; length 4.00 mm	*P. desaii* Mani & Kaul
8.	Clypeus strongly emarginate; scutellum not truncate but nipple-shaped apically	9
	Clypeus straight or a little rounded; scutellum emarginate or truncate apically	10
9.	Second tergite with fine squamous punctae; black with metallic-blue and bronze on thorax; scape and pedicel black with tint of blue; mandibles, knees, apical part of all tibiae reddish-brown, tarsi yellowish-brown; femora and basal part of tibiae with blue; veins very pale yellowish-brown. Length 3.00 mm	*P. dalawanensis* Hedqvist
	Second tergite smooth; black, thorax with green and coppery, mixed with purple on scutum; funicular segments reddish-yellow; veins ashy-black; length 3.50-5.80 mm	*P. obsoletus* Masi
10.	Head smooth; occiput and gena only striate	11
	Head with shallow punctae on face, except near scrobe; occiput striate	13
11.	Legs ferruginous-brown or brownish-black	12
	Legs blue, tarsi white; length 4.00 mm	*P. nesiotes* Crawford
12.	Legs ferruginous-brown; hind femora black; tips of tibiae and tarsi pale brown; length 3.00 mm	*P. manii* (Mani & Kaul)
13.	Body 5.00 mm long; tarsi white-testaceous	*P. luzonensis* Crawford
	Body 3.20 mm long; tarsi brown	*P. keralensis* Mani & Kaul
	Body 3.00 mm long; tarsi pale brown	*P. coorgensis* Mani & Kaul

Perilampus microgastris Férrière

1930 *Perilampus microgastris,* Férrière, *Bull. ent. Res.,* 21 : 353-354.

1965 *Perilampus microgasteris,* Farooqi, Subba Rao & Sharma, *Beitr. Ent.,* 15 (1/2) : 183.

Female : Length 3.00 mm. Body wholly black, without trace of metallic colour; abdomen wholly shiny, without microsculpture on basal tergites; scape black, pedicel black; rest of antennae brown; all coxae black; fore and middle femora and tibiae largely brownish-black; tips of tibia and all tarsi pale brown; hind femur black, with some metallic reflections; knee and tibial tip brown to reddish-brown.

Head viewed from front without inner orbital carina; clypeus about 1.50 times as wide as long; face with a few punctae on either side of the clypeus broadly convex below, with a marginal row of fine punctae, but otherwise smooth; frons smooth; head viewed from above width about 2.50 times the length and a little wider than thorax; ocellocular space subequal to ocellar diameter; interocellar space about 2 times ocellar diameters; vertex smooth; head viewed from the side about 2 times as high as thick; gena about 0.20 of eye; scape long, slender; thorax with the prepectus confluent in front;

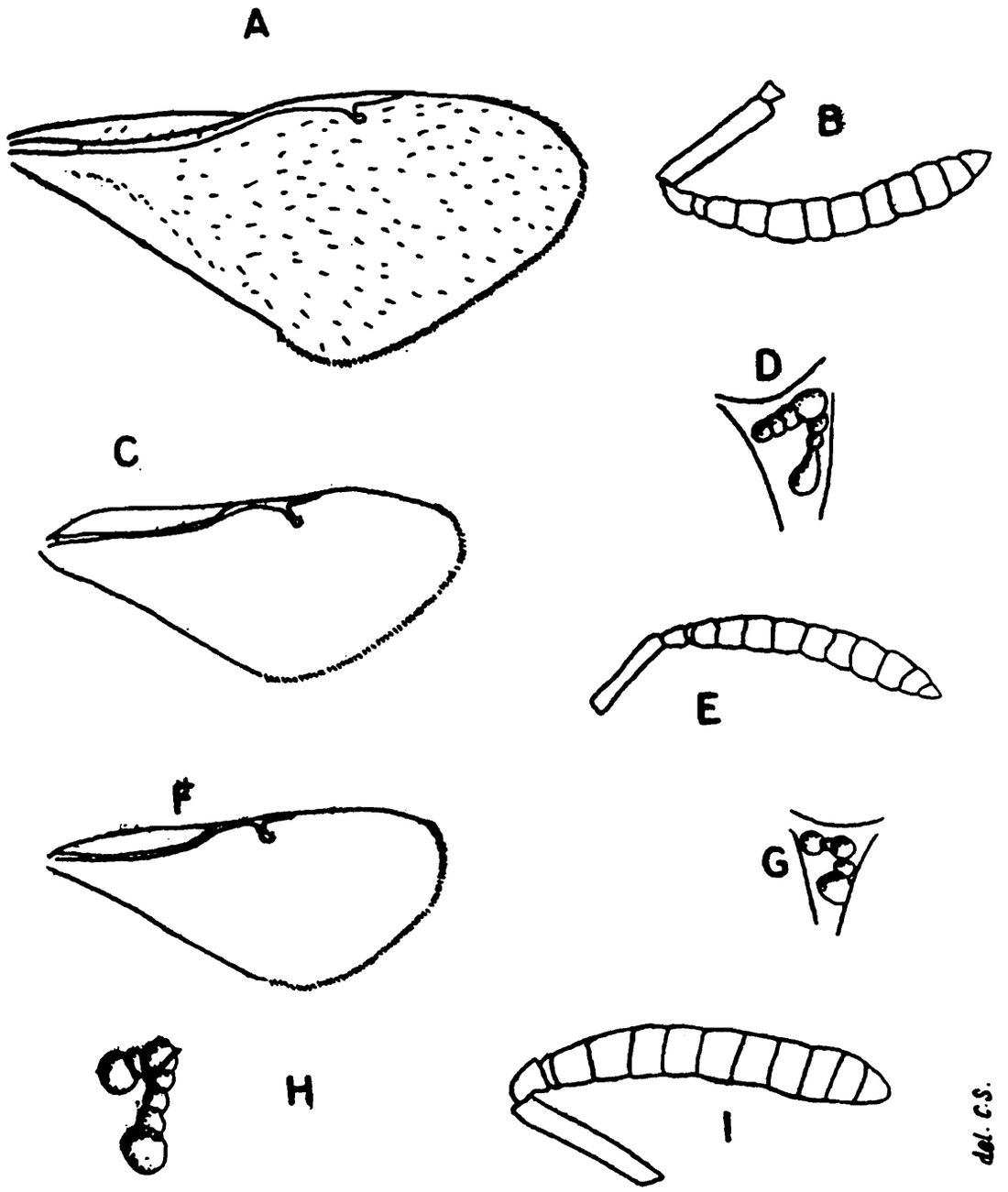

FIG. 123. A. *Perilampus cremastophagus* Mani & Kaul, male, Fore wing; B. *Perilampus keralensis* Mani & Kaul, female, antenna; C. *Perilampus keralensis* Mani & Kaul, female, fore wing; D. *Perilampus keralensis* Mani & Kaul, female, prepectus; E. *Perilampus shencottus* Mani & Kaul, female, antenna; F. *Perilampus shencottus* Mani & Kaul, female, fore wing; G. *Perilampus shencottus* Mani & Kaul, female, prepectus; H. *Perilampus cremastophagus* Mani & Kaul, male, prepectus; I. *Perilampus cremastophagus* Mani & Kaul, male, antenna.

scutellum equal to prescutum, about 1.25 times as long as wide; fore wing length to width 100 : 44; veins *sm* : *m* : *pm* : *st* ratio 466 : 100 : 50 : 66; abdomen basally shiny; hind margin of second tergite straight.

Type locality : Hosangabad (Madhya Pradesh)

Distribution : Dehra Dun, Coimbatore, Nilambur, Bombay

Hosts : Hyperparasite of *Hapalia machaeralis* defoliating *Tectona grandis;* parasitic on *Microgaster indicus* Wilkn., *Apanteles machaeralis* Wilkinson, *Apanteles taragmae* Wilkinson, parasitic on *Nephantis serinopsa.* The species is a hyperparasite that attacks different Braconids parasitizing larvae of Lepidoptera.

Perilampus shencottus Mani & Kaul

(Fig. 123)

1973 *Perilampus shencottus,* Mani & Kaul, *Mem. School Ent.,* 3 : 62.

Female : Length 2.40 mm. Body metallic-green; antennae brown; scape and pedicel partly black, with blue-green reflections; fore and middle femora and tibiae brownish-black, tarsi brown; hind femora with green and blue reflections, tibia brownish-black, tarsus brown; abdomen black with faint green reflections; wings hyaline, veins dark brown to brown.

Head viewed from above length to width 100 : 40, almost as wide as thorax; ocellocular space equal to about 1.60 ocellar diameter; interocellar space equal to about 3 ocellar diameters; front ocellar space almost equal to ocellar diameter; vertex shiny with some obscure and shallow punctae; occiput transversely striate; head viewed from in front height to width 100 : 80; inner orbital carina absent; frons smooth and shiny, with sparsely scattered setae, with more distinctly setigerous punctae on either side of the clypeus; head viewed from the side height to thickness 100 : 58; gena to eye 37 : 100; postorbit finely striated; antennae inserted somewhat below the middle of the orbit; segments 13 : 1.1.1.7.3; scape about 0.22 of antenna and about 5 times as long as thick; pedicel about 0.25 of the scape; annellus almost 0.30 of pedicel, about 2 times wider than long; first funicular segment shortest, almost as thick as long; funicular segments 2-7 subequal, somewhat longer than the first and gradually becoming wider distally; club about 0.66 of the scape and almost equal to the preceding 2 segments combined, terminal club segment oblique, short and obtusely conical.

Thorax with umbilicate punctae, closer than their own diameters; pronotum width to length 100 : 12; pronotum to mesonotum 25 : 100; prepectus confluent in front and with sculpture; mesonotum subequal to scutellum; parapsidal furrows complete, well developed; propodeum with median longitudinal carina; fore wing with veins *sm* : *m* : *pm* : *st* ratio 335 : 100 : 60 : 40; hind wing to fore wing 62 : 100; hind femur about 7 times as long as thick; tibia about 0.83 of the femur; tibial spur about 0.50 of metatarsus; tarsus about 0.80 of tibia; metatarsus about 0.50 of tarsus; abdomen shiny, without opaque microsculpture, about 0.44 of the body length; height of abdomen to its length 75 : 100.

Type locality : Shencottah Gap (Western Ghats)

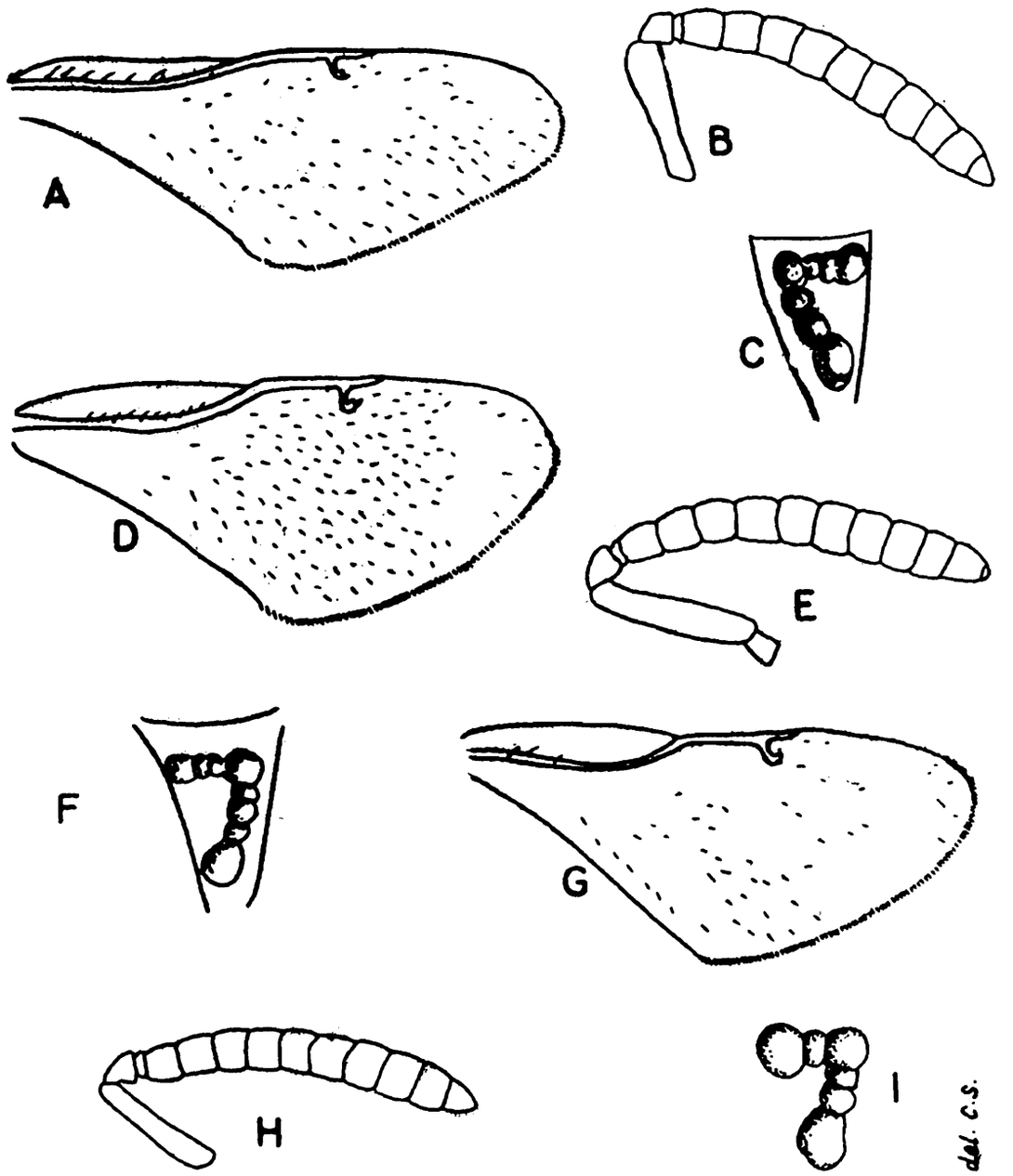

FIG. 124. A. *Perilampus singaporensis* Rohwer, female, fore wing; B. *Perilampus singaporensis* Rohwer, female, antenna; C. *Perilampus singaporensis* Rohwer, female, prepectus; D. *Perilampus manii* (Mani & Kaul), female, fore wing; E. *Perilampus manii* (Mani & Kaul), female, antenna; F. *Perilampus manii* (Mani & Kaul), female, prepectus; G. *Perilampus coorgensis* Mani & Kaul, female, fore wing; H. *Perilampus coorgensis* Mani & Kaul, female, antenna; I. *Perilampus coorgensis* Mani & Kaul, female, prepectus.

Perilampus yercaudensis Mani & Kaul

(Fig. 125)

1974 *Perilampus yercaudensis,* Mani & Kaul, *Mem. School Ent.,* 3 : 60.

Female : Length 2.70 mm. Body wholly black; scape, pedicel black, rest of antennae ferruginous-brown; all femora black, tibiae black except for the brown tips; tarsi brown.

Head viewed from above length to width 100 : 40; ocellocular space a little more than ocellar diameter; interocellar space equal to about 2 ocellar diameters; front ocellar space equal to ocellar diameter; occiput transversely striate; head viewed in front height to width 100 : 80; inner orbital carina well developed; face with scattered minute punctae; head viewed from the side height to thickness 100 : 56; gena about 0.16 of eye with a distinct carina; antenna with 13 segments : 1.1.1.7.3; scape about 0.25 of antenna and about 6 times as long as thick; pedicel short, about 0.83 times as long as thick at apical end and about 0.14 of the scape; annellus as wide as pedicel; funicular segments subequal, first funicular segment about 1.80 times the pedicel and a little wider than long; club almost equal to the preceding 2 segments combined; thorax closely umbilicately punctate; pronotum about 0.20 of mesonotum, prepectus confluent and sculptured; mesonotum length a little more than 0.50 times the width; scutellum a little longer than mesonotum, a little longer than wide; propodeum with a short median carina; fore wing with veins *sm* : *m* : *pm* : *st* ratio 275 : 100 : 80 : 30; hind femur long, stout; hind tibia a little shorter than femur; tarsus about 0.60 of the tibia; longer tibial spur about as long as metatarsus; abdomen smooth, shiny with very minute punctation.

Type locality : Yercaud (Shevroy Hills : Eastern Ghats)

Perilampus nilamburensis Mani & Kaul

(Fig. 125)

1973 *Perilampus nilamburensis,* Mani & Kaul, *Mem. School Ent.,* 2 : 48.

Female : Length 4.50 mm. Body black, head and thorax with metallic-blue reflections; abdomen shiny at base; scape and pedicel ferruginous-brown to black; tarsus brown; hind coxa and femur with metallic-blue reflections; tibia largely brownish-black with metallic-blue reflections, except at tip; wings hyaline.

Head viewed from above a little wider than thorax, width to length 100 : 43; vertex shiny; occiput finely transversely striated; ocelli almost in a striaght line; ocellocular space nearly equal to 2 ocellar diameters; interocellar space almost equal to ocellar diameter; head viewed from the front width to length 100 : 70; inner orbital carina absent; head viewed from the side height to thickness 100 : 55; gena a little more than 0.25 of eye, with distinct carina; postorbital space with minute scattered punctae; occiput finely longitudinally striated; antenna stout, inserted a little below the middle of the orbital length, segments 13 : 1.1.1.7.3; scape slender, a little over 0.25 of antenna and about 7 times as long as thick; pedicel about 0.25 of scape; annellus about 0.33 of pedicel; first funicular segment as long as thick, thicker apically than basally, other funicular segments subequal; club distinctly over 0.50 of the scape and almost equal to the preceding 3 segments combined.

Thorax coarsely umbilicately punctate; pronotum nearly 0.33 of scutum; scutellum about 0.60 of scutum; prepectus not confluent in front with pronotum, with sculpture; propodeum with a median longitudinal carina, otherwise smooth; fore wing length to width 100 : 43; veins *sm* : *m* : *pm* : *st* ratio 300 : 100 : 60 : 28; hind femur stout; tibia almost equal to femur but more slender; tarsus more than 0.50 of metatarsus; abdomen shiny.

Male : Length 4.00 mm. Body black, with metallic-blue reflections; tarsi and tips of tibia pale brown; rest of leg brownish-black with metallic-blue reflections; antenna brownish-black; scape and pedicel dark ferruginous-brown to black.

Head viewed from above about 2.20 times as wide as long and nearly as wide as thorax; ocellocular space subequal to 2 ocellar diameters; occiput striate; head viewed from front width to length 100 : 70; inner orbital carina absent; head viewed from the side about 1.70 times as high as thick; gena about 0.33 of eye, with distinct carina; malar space with obscure minute punctae.

Type locality : Nilambur (Western Ghats)

Host : Hyperparasite on a pupa of a Tachinid parasite of Lepidopterous larva; hyperparasite on *Euterocca fasciata.*

Perilampus singaporensis Rohwer

(Fig. 124)

1923 *Perilampus singaporensis,* Rohwer, *Philip. J. Sci.,* 22 : 349-351.
1973 *Perilampus birmanus,* Mani & Kaul, *Mem. School Ent.,* 2 : 40.

Female : Length 3.50 mm. Body dark metallic-green to bluish-green, with prescutum black; scape and pedicel black; rest of antennae dark brown; fore and hind legs dark reddish-brown, with metallic-green reflections on femora and parts of tibia; hind femora and tibiae metallic-green; hind tarsus dark reddish-brown; wings hyaline; venation dark brown.

Head viewed from above slightly wider than thorax, a little over 2 times as wide as long; vertex shiny, with scattered fine minute punctae; occiput finely transversely striate; ocellocular space nearly equal to 2 ocellar diameters; interocellar space nearly equal to ocellocular space; head viewed from the front width to length 100 : 70; inner orbital carina well developed; clypeus with front margin sinuate and almost uniformly punctate, width to height 100 : 80; head viewed from the side about 1.50 times as high as thick; gena with distinct carina and about 0.14 of the eye; postorbital space with scattered punctae; antennae stout, inserted almost in the middle of face, segments 13 : 1 1.1.7.3; scape slender, almost 0.33 of the antennal length and about 3.40 times as long as thick; pedicel about 0.25 of scape; annellus nearly as wide as pedicel; first funicular

segment as long as thick and somewhat thicker apically than at base, other funicular segments subequal, but becoming distinctly more transverse apically; club more than 0.50 of the scape and about equal to the preceding 2.50 segments combined.

Thorax closely and coarsely punctate; pronotum about 0.14 of prescutum; scutellum almost equal to scutum; prepectus not confluent in front with pronotum, sculptured; propodeum with a median longitudinal carina; fore wing length to width 100 : 36, hyaline; veins *sm* : *m* : *pm* : *st* ratio 300 : 100 : 59 : 22; hind tibia almost equal to femur; tarsus about 0.75 of tibia; tibial spur about 0.75 of metatarsus; abdomen opaque at base, with fine micropunctae.

Type locality : Singapore

Distribution : Burma, Singapore, Strait Settlements

Perilampus manii (Mani & Kaul)

(Fig. 124)

1973 *Perilampus carinifrons,* Mani & Kaul, *Mem. School Ent.,* 2 : 41.

Female : Length 3.00 mm. Body black; scape and pedicel black, rest of antenna ferruginous-brown; fore and middle femora, all tibiae except at tip dark ferruginous-brown; hind femora black; tips of tibiae and tarsi pale brown.

Head viewed from above as wide as thorax, distinctly more than 2 times as wide as long; vertex shiny, with obscure minute punctae all over; ocellocular and interocellar spaces nearly equal to 2 ocellar diameters; front ocellar space equal to ocellar diameter; occiput finely transversely striate; head viewed from the front width to length 100 : 85; inner orbital carina strongly developed, converging above and behind front ocellus; clypeus punctate all over; head viewed from the side height to thickness 100 : 58; gena about 0.25 of eye, with a distinct carina; postorbital space near occipital border longitudinally striate; antenna short, stout, inserted about the middle of the orbital length; scape slender, almost 0.33 of antenna and about 6 times as long as thick; pedicel nearly 0.25 of scape and annellus distinctly narrower than pedicel; first funicular segment about 0.20 of scape and as long as thick, thicker apically than basally; other funicular segments subequal to the first segment but more transverse; club equal to the preceding 3 segments combined.

Thorax closely umbilicately punctate; pronotum about 0.33 of scutum; scutellum about 1.25 times scutum; prepectus separate, sculptured; propodeum with median longtudinal carina; fore wing length to width 100 : 45; veins *sm* : *m* : *pm* : *st* ratio 300 : 100 : 60 : 60; hind femora stout; tibia a little shorter than femur, but more slender; longer tibial spur nearly 0.50 of metatarsus; tarsus about 0.60 of tibia; abdomen shiny basally.

Type locality : Nilambur (Western Ghats)

Perilampus keralensis Mani & Kaul

(Fig. 123)

1974 *Perilampus keralensis,* Mani & Kaul, *Mem. School Ent.,* 3 : 59.

Female : Length 3.20 mm. Body black; antennae blackish-brown, scape and pedicel black; fore femur largely black with brown tip; tibia blackish-brown; tarsus brown; middle and hind femora and tibia black except for the brownish-black tip; tarsi brown; wings hyaline; veins dark brown.

Head viewed from above a little wider than thorax, about 3 times as wide as long; vertex shiny, with sparse, obscure punctae; ocellocular space equal to 2.40 ocellar diameters; interocellar space about 2.50 ocellar diameters; front ocellar space equal to ocellar diameter; occiput finely, transversely striate; head viewed in from the front length to width 100 : 80; interorbital space about 0.80 of head width; inner orbital carina moderately developed, converging above and behind the front ocellus; clypeus with a few setigerous punctae anteriorly; head viewed from the side height to thickness 100 : 42; gena about 0.33 of the eye length with a distinct carina; antennae inserted about the level of the middle of orbit, short, stout; segments 13 : 1.1.1.7.3; scape slender, almost 0.33 of the antennae and about 6 times as long as thick; pedicel a little more than 0.25 of the scape; annellus about 0.37 of the pedicel; funicular segments subequal, first segment about 0.25 of the scape and about as long as thick, thicker apically than basally; club equal to the preceding 2.50 segments combined.

Thorax closely umbilicately punctate; pronotum about 0.14 of the mesonotum; prepectus separate, with sculpture; mesonotum distinctly less than 2 times as wide as long; scutellum equal to mesonotum, but about 1.20 times as long as wide; propodeum with distinct, complete, median longitudinal carina, bifurcating posteriorly; fore wing hyaline, veins *sm* : *m* : *pm* : *st* ratio 300 : 100 : 70 : 40; hind wing to the fore wing 60 : 100; hind femur stout; tibia almost equal to femur; longer tibial spur about 0.60 of the metatarsus; tarsus about 0.75 of tibia; abdomen about 0.30 of body; smooth; shiny at base.

Type locality : Achankovil (Kerala)

Perilampus coorgensis Mani & Kaul

(Fig. 124)

1973 *Perilampus coorgensis,* Mani & Kaul, *Mem. School Ent.,* 2 : 43.

Female : Length 3.00 mm. Body black; scape and pedicel blackish-brown, rest of antennae dark brown; all femora black; tibia except at tips brownish-black; tarsi pale brown.

Head viewed from above a little wider than thorax; vertex shiny, with a few punctae, about 2 times as wide as long; ocellocular space equal to 2 ocellar diameters; interocellar space subequal to ocellar diameter; occiput striate; head viewed from the front width to height 100 : 86; inner orbital carina well developed, converging above and behind the front ocellus; head viewed from side length to thickness 100 : 48; gena about 0.33 of eye; occiput longitudinally striate; antennae inserted below the middle of eye, short, stout; segments 13 : 1.1.1.7.3; scape about 0.25 of antenna and about 5 times as long as thick; first funicular segment equal to pedicel, but uniformly thick; other funicular segments subequal to the first; club distinctly shorter than the preceding 3 segments combined and a little less than scape.

Thorax coarsely umbilicately punctate; pronotum about 0.16 of scutum; scutellum subequal to scutum; prepectus separate, sculptured; propodeum with a median longitudinal carina, otherwise smooth; fore wing length to width 100 : 42; veins *sm* : *m* : *pm* : *st* ratio 252 : 100 : 50 : 29; hind tibia a little shorter than femur, but more slender; longer tibial spur about 0.50 of metatarsus; tarsus about 0.75 of tibia; abdomen opaque at base, with scattered punctae as microsculpture.

Type locality : Tithimatti (South Coorg).

Perilampus cremastophagus Mani & Kaul

(Fig. 123)

1973 *Perilampus cremastophagus,* Mani & Kaul, *Mem. School Ent.*, 2 : 44.

Male : Length 3.00 mm. Body wholly black, antennae black except for the blackish-brown scape and pedicel; femora black; tibia blackish-brown; tarsi brown.

Head viewed from the front width to height 100 : 78; inner orbital carina absent; head viewed from above width to length 100 : 40; ocellocular space equal to 2 ocellar diameters; front ocellar space equal to ocellar diameter; vertex shiny; occiput striate; head viewed from the side height to thickness 100 : 50; gena about 0.25 of eye and with a carina; antennae stout, segments 13 : 1.1.1.7.3; scape about 0.25 of antenna and about 6 times as long as thick; pedicel a little less than 0.33 of scape; annellus as thick as pedicel and about 0.25 of its length; first funicular segment a little longer than thick; other funicular segments subequal, but more transverse; club distinctly more than 0.50 of scape and nearly equal to the preceding 2.50 segments combined.

Thorax reticulately, coarsely punctate; pronotum about 0.20 of scutum; scutellum a little less than scutum; prepectus separate, with sculpture; propodeum with a short median longitudinal carina; fore wing length to width 100 : 43; veins *sm* : *m* : *pm* : *st* ratio 280 :

100 : 60 : 50; hind femur stout, cylindrical; tibia a little shorter than femur; longer tibial spur a little more than 0.50 of metatarsus; tarsus about 0.60 of tibia; abdomen smooth and shiny basally, without evident microsculpture.

Type locality : Tithimatti (South Coorg)

Host : Cremastophagus hapaliae defoliating *Tectona grandis*

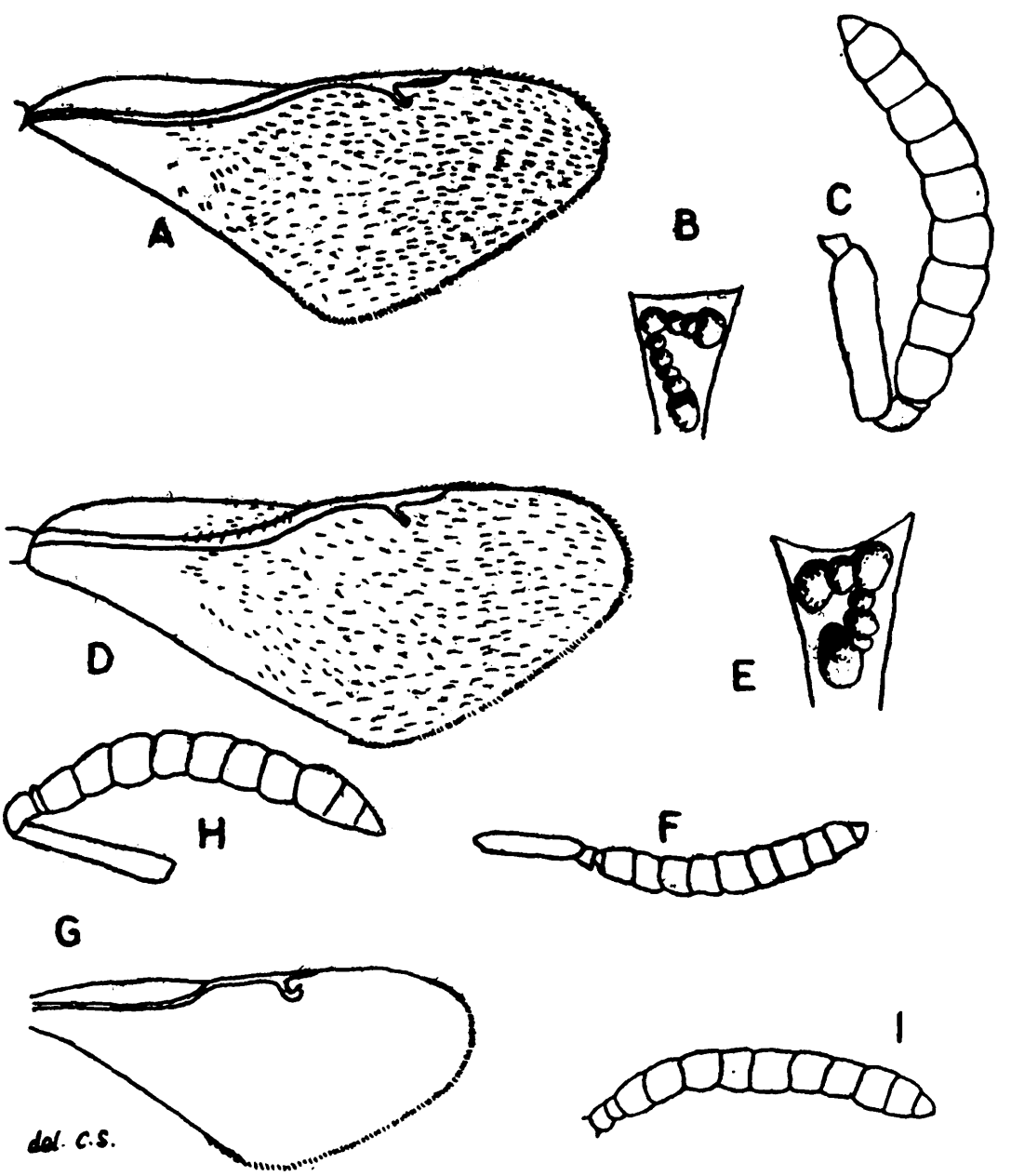

FIG. 125. A. *Perilampus desaii* Mani & Kaul, female, fore wing; B. *Perilampus desaii* Mani & Kaul, female, prepectus; C. *Perilampus desaii* Mani & Kaul, female, antenna; D. *Perilampus nilamburensis* Mani & Kaul, female, fore wing; E. *Perilampus nilamburensis* Mani & Kaul, female, prepectus; F. *Perilampus yercaudensis* Mani & Kaul, female, antenna; G. *Perilampus yercaudensis* Mani & Kaul, female, fore wing; H. *Perilampus nilamburensis* Mani & Kaul, female, antenna; I. *Euperilampus nepalensis* Mani & Kaul, male, antenna.

Perilampus desaii Mani & Kaul

(Fig. 125)

1973 *Perilampus desaii,* Mani & Kaul, *Mem. School Ent.,* 2 : 46.

Female : Length 4.00 mm. Body wholly black, without trace of metallic-green colouration, except on the hind femur; scape and pedicel black, rest of antenna dark reddish-brown; all femora and hind tibia black, with some metallic-blue reflections on femur; tips of fore femur, fore and middle tibia and all tarsi brown; venation brown; wings hyaline.

Head viewed from above a little wider than thorax and nearly 2 times as wide as long; vertex shiny, with sparse, shallow fine punctae; occiput finely transversely striate; ocelli almost in a straight line; ocellocular space equal to about 2 ocellar diameters; front ocellar space equal to ocellar diameter; head viewed from front length to width 89 : 100; inner orbital carina strongly developed, complete and extending above behind the front ocellus; face impunctate; front margin of clypeus nearly straight and distinctly more punctate in front than behind; head viewed from the side almost 2 times as high as thick; gena slightly less than 0.16 of eye, with a distinct carina; postorbital space with scattred shallow punctae; occiput finely longitudinally striate; antenna short, stout, inserted a little below the middle of orbit, segments 13 : 1.1.1 7.3; scape slender, almost 0.33 of antenna, about 5 times as long as thick; pedicel about 0.20 of scape, 1.25 times as long as thick; annellus nearly as wide as pedicel; first funicular segment as long as thick, thicker apically than basally, remaining funicular segments almost equal, but becoming distinctly more transverse apically; club about 0.50 of scape and slightly shorter than the preceding 2 segments combined.

Thorax closely coarsely punctate; pronotum about 0.16 of scutum; scutellum about 1.25 times prescutum; prepectus not confluent in front with pronotum, sculptured; propodeum with a short median longitudinal carina and deep fovea on either side, smooth and shiny otherwise; fore wing slightly less than 2.50 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 330 : 100 : 67 : 33; hind tibia slightly shorter than femur; longer tibial spur about 0.50 of metatarsus.

Abdomen with the basal part of tergites, except for narrow hind margin of the second tergite, opaque with microsculpture.

Type locality : Maymyo (Burma)

Distribution : Burma

Host : Hyperparasite of a Lymantriid defoliating *Flacourtia cataphracta.*

SPECIES INCERTAE SEDIS

Perilampus hedychroides Walker

1871 *Perilampus hedychroides,* Walker, *Notes Chalcids,* 4 : 67.

Female : Length 4.30 mm.

"Golden green, head excavated in front, vertex black above the ocelli; antennae piceous, filiform short, stout, compact; thorax largely punctate; scutum black, scutellum large, parapsidal furrows complete, petiole short; abdomen gibbous, shorter than thorax, very finely punctate, femoral tips brown, tarsi yellow, vein *m* 0.50 of *sm, pm* more than 0.50 of *m, st* very short."

Type locality : Ceylon

Euperilampus Walker

1871 *Euperilampus,* Walker, *Notes Chalcids,* 4 : 67.
1904 *Euperilampus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 266.
1915 *Euperilampoides,* Girault, *Mem. Queensland Mus.,* 3 : 308.
1923 *Nesoperilampus,* Rohwer, *Philip. J. Sci.,* 22 (4) : 349.
1966 *Perilampoides,* Riek, *Austral. J. Zool.,* 14 : 227.
1969 *Euperilampus,* Burks, *Proc. ent. Soc. Washington,* 71 : 78.
1971 *Euperilampus,* Boucek, *Mitt. muüchn. ent. Ges.,* 61 : 90.
1978 *Euperilampus,* Boucek, *Ent. Scand.,* 9 : 303.
1979 *Euperilampus,* Krombein *et al.,* Hymen. N. America, 1 : 770.

This genus is readily recognized by the deeply excavate scrobes, with strongly keeled margin; strongly striated head; large scutellum with marginal rim; long *pm* in fore wing; pronotum enlarged; the underside of the enlarged scutellar apex without grooves; prepectus narrow.

Type-species : Perilampus gloriosus Walker

*Euperilampus nepalensis (Mani & Kaul)

(Fig. 125)

1973 *Euperilampoides nepalensis,* Mani & Kaul, *Mem. School Ent.,* 2 : 38.

Male : Length 5.00 mm. Body wholly black; antenna dark reddish-brown, except for the black scape and pedicel; all tarsi pale brown; wings hyaline; veins dark brown.

Head viewed from above as wide as thorax; length to width 100 : 300; ocellocular space equal to almost 2 ocellar diameters; interocellar space and front ocellar space equal to ocellar diameter; vertex transversely striate behind the ocellus and longitudinally and more dinstinctly striate in front of the ocellus; head viewed in front length to width 100 : 122; clypeus strongly sinuate in front, with fine

* This species may prove to be identical with *E. scutellaris* (Gir.)

setigerous punctae all over except for a narrow space above; scrobes deep, wide, shiny, with carinate margin, the carina curving above behind the front ocellus; head viewed from the side height to thickness 2 : 1; gena about 0.33 of eye; malar space longitudinally striated; antenna inserted in the middle of face, short, moderately stout, segments 13 : 1.1.1.7.3; all funicular segments subequal; club almost equal to the preceding 2 segments combined.

Thorax closely reticulately punctate; pronotum about 0.33 of scutum; width to length 100 : 550; scutellum about 1.40 times the scutum; fore wing length to width 100 : 35; veins *sm : m : pm : st* ratio 50 : 100 : 250 : 60; hind wing about 0.52 of fore wing; propodeum transversely striated on either side of a fine median longitudinal carina; hind femora about 4 times as long as thick; tibia distinctly shorter with 2 spurs; spur about 0.50 of metatarsus; tarsus nearly equal to tibia; metatarsus about 0.33 of tarsus; abdomen shiny, without opaque base; second tergite with scattered and widely spaced fine punctae at base.

Type locality : Nepal : Kathmandu

This species is distinguished from the related *E. concinnus* (Masi) from Formosa in its larger size and in the much longer vein *pm*.

Philomides Haliday

1862 *Philomides,* Haliday, *Ann. Soc. Ent. France,* (4) 2 : 115.
1904 *Philomides,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 266.
1909 *Philomides,* Schmiedeknecht, *Gen. Ins.,* 97 : 83.
1938 *Philomides,* Mani, *Cat. Indian Ins.,* 23 : 72.

This genus resembles *Perilampus,* from which it is distinguished by the presence of a distinct club, known only as males.

Type-species : Philomedes paphius Haliday.

Undescribed species reported from Bellary.

FAMILY EUCHARIDAE*

1846 *Eucharidae*, (partim), Walker, *List Chalcids Brit. Mus.,* 1 : 21.
1856 *Eucharoidae*, Förster, *Hym. Stud.,* 2 : 18, 22, 42.
1886 *Eucharinae*, Howard, *Ent. Amer.,* 1 : 198.
1897 *Eucharidae*, Ashmead, *Proc. Ent. Soc. Washington,* 4 : 235.
1899 *Eucharidae*, Ashmead, *Proc. Ent. Soc. Washington,* 4 : 245.
1904 *Eucharidae*, Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 266.
1909 *Eucharidinae,* Schmiedeknecht, *Gen. Ins.,* 97 : 67.
1915 *Eucharidae*, Girault, *Mem. Queensland Mus.,* 4 : 255.
1924 *Eucharidae*, Ruschka, *Deutsch. ent. Z.,* 82.
1938 *Eucharidae*, Mani, *Cat. Indian Ins.,* 23 : 74.
1940 *Eucharidae*, Clausen, *Proc. ent. Soc. Washington,* 42 (8) : 161.

* Some authors use Eucharitidae for Eucharidae.

1940 *Eucharidae*, Gahan, *Proc. US Nat. Mus.*, 88 : 425.
1979 *Eucharitidae*, Krombein *et al.*, Hymen. N. America, 1 : 875.

Body generally metallic-green or blue; mandibles sickle-shaped; antennae often dentate, serrate, pectinate or with branches; thorax large, greatly arched upwards, scutellum most usually produced behind into long spine or longitudinal forked process; abdomen petiolate, most usually strongly compressed, hind coxae and femora neither swollen nor compressed, unarmed.

Mostly tropical or subtropical forms, parasitic on ants.

KEY TO GENERA

1.	Females	2
	Males	14
2.	Scutellum simple; neither bidentate nor produced into a conical long spinous process behind	3
	Scutellum bidentate of produced behind into long processes over abdomen	9
3.	Antennae moniliform	4
	Antennae not moniliform	5
4.	Abdomen subcompressed; ascending	*Eucharis* Latreille
5.	Antennal segments serrate or subdentate	8
	Antennal segments cylindrical	6
6.	Antennae with 13 segments	*Orasema* Cameron
	Antennae with only 11 segments	7
7.	Thorax rugose; petiole elongate-cylindrical, not abruptly expanded apically	*Parapsilogastrus* Girault
8.	Scutellum rounded behind, not produced conically and elevated behind; wings hyaline	*Pseudochalcura* Ashmead
	Scutellum subconically elevated behind; wings clouded behind vein *st*	*Chalcura* Kirby
9.	Scutellum bidentate behind, scutellar process never very long, propodeum unarmed	10
	Scutellar process long, sometimes extending broadly as a shield over abdomen or conically produced	11
10.	Metapleura with a hump-like elevation above ..	*Stilbula* Spinola
	Metapleura without a hump-like elevation above	*Schizaspidia* Westwood
11.	Scutellum not conically produced; scutellar process elongate, slender, curving inward apically	12
	Scutellar process broad, covering the whole of abdomen	13
12.	Antennae with 11 segments; third segment not much longer than the fourth	13
	Antennae with 12 segments	*Kapaloides* Mani
13.	Thorax not pubescent; scutellar processes always longitudinally striate .	*Kapala* Cameron

	Thorax finely pubescent; scutellar process smooth, never longitudinally striate	*Lasiokapala* Ashmead
14.	Scutellum spined, bidentate or produced into long processes behind and extending over abdomen	15
	Scutellum simple; antennae with more than 4 branches; wing clouded behind vein *st*	*Chalcura* Kirby
15.	Scutellum bidentate or produced into long processes over abdomen	21
	Scutellum produced into a simple conical spine	16
16.	Antennae with never more than 13 segments	17
17.	Antenna with branches	23
	Antennae without branches	18
18.	Flagellum moniliform	19
	Flagellum cylindrical	20
19.	Abdomen compressed, ascending	*Eucharis* Latreille
20.	Antennae with 10-11 segments; petiole cylindrical; thorax rugose	*Parapsilogastrus* Girault
	Antenna with 13 segments	*Orasema* Cameron
21.	Scutellum bidentate, processes never very long	22
	Scutellar processes long, broad as a shield over abdomen	24
22.	Metapleura with a hump-like process above	*Stilbula* Spinola
	Metapleura without hump	*Schizaspidia* Westwood
23.	Antennae with 11 segments	24
	Antennae with 12 segments	*Kapaloides* Mani
24.	Thorax not pubescent; scutellar process longitudinally striate	*Kapala* Cameron
	Thorax finely pubescent; scutellar process smooth, never striate	*Lasiokapala* Ashmead

Chalcura Kirby

1860 *Eucharis* (partim), Walker, *Ann. Mag. Nat. Hist.*, 6 : 359.
1886 *Chalcura,* Kirby, *J. Linn. Soc. London (Zool.),* 20 : 30.
1904 *Chalcura,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 268, 269.
1909 *Chalcura,* Schmiedeknecht, *Gen. Ins.*, 97 : 75.
1938 *Chalcura,* Mani, *Cat. Indian Ins.*, 23 : 75.

Antennae in female with 12 segments simple; in male serrated or subdentate or segments 3-11 externally with long branches; scutellum bulging, simple, neither bidentate nor produced into long processes, in female scutellum subconically elevated; fore wings with a substigmal cloud or fascia; metatarsus subequal to the remaining tarsal segments combined; abdominal petiole in female short, wide; in male elongate, slender, nearly 0.46 of abdomen; longitudinally striate in both sexes; abdomen ovate in female; conical in male.

Type-species : Chalcura deprivata (Walker)

Chalcura deprivata (Walker)

1860 *Eucharis deprivata,* Walker, *Ann. Mag. Nat. Hist.,* 6 : 359.
1863 *Eucharis deprivata,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 44.
1886 *Chalcura deprivata,* Kirby, *J. Linn. Soc. London (Zool.),* 20 : 30.
1909 *Chalcura deprivata,* Schmiedeknecht, *Gen. Ins.,* 97 : 75.
1938 *Chalcura deprivata,* Mani, *Cat. Indian Ins.,* 23 : 75.

"Mas. Viridis, cupreo varia, rude punctata, antennis piceis, thorace longioribus, novem-ramosis, scapo flavo, thorace gibbo, petiolo longo gracili, abdomine fusciformi compresso glabro subtus rufo, pedibus flavis, alis cinereis fusco notatis.

Male : Green, partly cupreous, roughly punctured.

Head as broad as the thorax; antennae piceous, longer than the thorax, with 9 subclavate branches; scape yellow; thorax gibbous, well developed; scutellum prominent; metathorax large, declining; petiole slender, cylindrical, nearly as long as the abdomen; the latter fusciform, compressed, smooth, shining, red beneath; legs yellow, slender; coxae green; wings cinereous; fore wings with an elongate brown spot extending from the stigma to the middle of the disk; veins black, in structure like those of *E. convergens.* Length of the body ¾ line; of the wings 1½ line"

Type locality : Ceylon

Distribution : Ceylon

Eucharis Latreille

1787 *Cynips* (partim), Fabricius, *Mant. Ins.,* 1 (21) :
1802 *Eucharis,* Latreille, *Hist. Nat. Crust. Ins., 3 : 210.*
1904 *Eucharis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 267, 269.
1909 *Eucharis,* Schmiedeknecht, *Gen. Ins.,* 97 : 71.
1938 *Eucharis,* Mani, *Cat. Indian Ins.,* 23 : 74.

Head transverse, narrower than thorax, viewed in front triangular; antennae short, stout, with 12 segments; scape short, hardly longer than the first funicular segment; funicular segments moniliform; frons broad, weakly impressed; thorax greatly arched, smooth, shiny, pronotum short, mesonotum with well developed parapsidal furrows; scutellum large, bulging, separated from mesonotum by a light suture, with a shallow longitudinal furrow, unarmed behind, with only a transverse lamellate margin; propodeum short, steeply declivous; fore wing with only veins *sm* and base of *st;* no fringe; legs slender, femora slightly thickened basally; petiole long but somewhat expanded and impressed apically; abdomen compressed, carried at right angle below tip of petiole; first tergite very large, occupying most of the abdomen; ovipositor concealed.

Type-species : Euchars adscendens (Fabricius)

Eucharis convergens Walker

1860 *Eucharis convergens,* Walker, *Ann. Mag. Nat. Hist.,* 6 : 358.
1863 *Eucharis convergens,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 44.
1909 *Eucharis convergens,* Schmiedeknecht, *Gen. Ins.,* 97 : 72.
1938 *Eucharis convergens,* Mani, *Cat. Indian Ins.,* 23 : 74.

"Mas. Viridis, cupreo varia, rude punctata, antennis piceis thorace brevioribus octo-ramosis, scapo flavo, thorace gibbo, scutello spinis duabus longis divergentibus basi connexis armato, petiolo longo gracili, abdomine cyaneoviridi longi-ovato glabro parvo, pedibus flavis, alis cinereis fusco notasis.

Foem. Obscure Viridis, antennis nigris subclavatis submoniliformibus, femoribus piceis.

Male : Green, partly cupreous, roughly punctured; head as broad as the thorax; antennae piceous, shorter than the thorax, with 8 linear branches, whose tips are acuminated; scape yellow; thorax gibbous, well developed; scutellum conical, prominent, furrowed along the middle, armed at the tip with 2 long, diverging spines, which are connected at the base; metathorax large, declining; petiole slender, cylindrical, nearly as long as the abdomen; the latter elongate-oval, bluish-green, smooth, shining, slightly compressed and consisting apparently of but one segment; legs yellow, rather slender; wings cinereous; fore wing brownish about the stigma; veins and stigma black; ulna shorter than the humerus; radius very short; cubitus short.

Female : Dark green. Head a little narrower than the thorax, impressed between the eyes; antennae with the flagellum black, subclavate, submoniliform; petiole much shorter than the abdomen; the latter coarctate, much clavated, red beneath; femora piceous, except towards the tips; fore wing with the spot on the stigma darker and more concise than that of the male, and with a diffuse brownish mark behind it. Length of the body 2 lines; of the wing 3½ lines."

Type locality : Ceylôn

Distribution : Ceylon

Eucharis myrmyciae Forel

1890 *Eucharis myrmyciae,* Forel, *Ann. Soc. Ent. Belgie,* 20 : 8.
1909 *Eucharis myrmyciae,* Schmiedeknecht, *Gen. Ins.,* 97 : 72.
1938 *Eucharis myrmyciae,* Mani, *Cat. Indian Ins.,* 23 : 74.

Type locality : "India"

Eucharis (?) testacea Motschulsky

1863 *Eucharis* (?) *testacea,* Motschulsky, *Bull. Soc. Imp. Nat. Muscou,* 36 (3) : 44.
1909 *Eucharis* (?) *testacea,* Schmiedeknecht, *Gen. Ins.,* 97 : 72.
1938 *Eucharis* (?) *testacea,* Mani, *Cat. Indian Ins.,* 23 : 75.

Length 3.75 mm. "Elongata, gibbosa, antice rugoso-punctata, postice nitida, rufo-testacea, oculis, capitis, thoraceis abdominisque dorso apicesque infuscatis, antennarum funiculo nigro-piceo, scape pedibusque dilute testaceis; capite sub-rotundatao, mediocri depresso, postice rugoso-punctato, vertice subexcavato, nitido, nigro, lateraliter striguloso, ocellis vix distinctis, transverso positis, oculis magnis, sub-ovalis, convexis, prominulis, antennis dimidio corporis longioribus, linearis, scapo capite fere breviore, articulo 2-do brevi, 3-8 elongato-ovatis, sparsim longo pilosi, ultimo (9-o) angustato-conico; thorace ut in *Eurytoma* sed punctura minus profundo notata, mesonotis apice obtuso-rotundato; petiolo abdominis longitudine, cylindrico; abdomine supra elongato-subovato, compresso, antice angulatim elevato, segmentis duabus primis magnis; femoribus simpliciter subclavatis, subdepressis, non incrassatis; alis subalbo-hylinis, setulosis, vena costalis fusco-testacea."

Type locality : Mt. Nuwarra Ellia : Ceylon

Kapaloides Mani

1942 *Kapaloides,* Mani, *Indian J. Ent.,* 4 (2) : 155.

This genus differs from *Kapala, Neokapala* and *Lasiokapala* in having one additional antennal segment, i.e. 12 instead of 11. It approaches *Lasiokapala* very closely in the structure of scutellum and pubescence of thorax; antennae unequally biramose; in other respects resembling the 3 above mentioned genera; antennal formula 12 : 1.1.9.1; funicular segments all branched or the first simple, branches single, branches single or unequally forked in some segments; scutellar processes with forks broad and carinate.

Type-species : Kapaloides travancorensis Mani

*Kapaloides andamanensis Mani

(Fig. 127)

1942 *Kapaloides andamanensis,* Mani, *Indian J. Ent.,* 4 (2) : 156.

Male : Length 3.50 mm. Body mostly dark green or very dark metallic-green, somewhat relatively less thickly pubescent than in *K. travancorensis;* head dark metallic-green, somewhat more densely pubescent above than below, about as wide as thorax, with a height about 0.60 of the greatest breadth; longitudinally striate in front between eyes and scrobe above level of antennal sockets and never as low down as the lower level of eyes; scrobe transversely striate; occiput transversely striate; sides obliquely striate behind, the striae continued as the transverse striations of the back; not punctate, smooth elsewhere; eyes dark brown; mesonotum metallic-green or

* This species may fall under *Schizapida.*

greenish-black; coarsely sculptured; scutellum with a distinct median furrow and sculptured similar to mesonotum; scutellar processes broad and with rather broad carinae, widely separated from each other; coxae dark testaceous-brown, rest of legs brown; abdomen dark coppery-brown, petiole black and irregularly longitudinally striate.

Type locality : Port Blair : Andamans

Kapaloides coromandelicus Mani

1974 *Kapaloides coromandelicus,* Mani, *Mem. School Ent.,* 3 : 45.

Male : Length 3.00 mm. Body black, head black with obscure metallic reflections; mandible, labrum and antennae ferruginous-brown, eyes and ocelli brownish-black; wings hyaline but with a diffuse faint infumation around vein *st,* veins dark brown; coxae concolorous with thorax, rest of legs brown, petiole black, first tergite of abdomen brownish-black, otherwise ferruginous-brown.

Head from above width to length 100 : 24; head to thorax subequal, interorbital space to head width 70 : 100, ocellocualr space 2 times ocellar diameter, interocellar space 3 times ocellar diameter; front ocellar space equal to 3 times ocellar diameter; vertex from the lateral ocelli forwards longitudinally striate, laterad of ocelli and occiput transversely striate; viewed in front length : width 72 : 100, finely striate upto the level of the insertion of antenna, clypeal fovea deep, supraclypeal line faint; clypeus almost straight anteriorly; labrum with 8 digits on the margin; mandibles with 3 stout tooth on right and 2 on left; viewed from side length to width 100 : 44, gena to eye length subequal, with longitudinal striae in the reduced postorbital space; antenna inserted in middle of face; antenna to head length subequal, rugose, segments 12 : 1.1.9.1; funicular segments 1-9 with branches, second branch onward flattened and distinctly expanded, thicker subapically and abruptly reduced apically; scape 2.70 times as long as thick, moderately stout in the middle; pedicel cup-shaped, 0.37 of scape; funicular segments 1-7 subequal, 8 and 9 distinctly longer and more slender than preceding; club flattened, slightly over 2 times preceding segments combined; ratio of the branches of funicular segments 1-9 respectively to length of club, 0.50, 1.30, 1.65, 1.75, 1.85, 1.60, 1.40, 1.40, 1.05.

Thorax coarsely rugosely reticulately punctate; pronotum concealed from above, mesonotum width : length 100 : 51, scutellum with median sulcus complete and shallow; scutellar fork prominent, about 0.31 of scutellum, separated from each other by their own length; parapsidal furrows shallow, axillary and scutellar sutures subfoveolate; fore wing length : width 100 : 40; veins *sm* : *m* : *pm* : *st* ratio 147 : 100 : 33 : 23; coxae subglobose; hind femur about 6 times as long as thick; tibia subequal to femur; tarsus

about 0.70 of tibia, spur 0.25 of metatarsus, metatarsus nearly 0.50 of tarsus, second 0.50 of metatarsus, third 0.70 of the second, fourth 0.50 of the third, fifth subequal to preceding.

Petiole smooth, slender, 4 times as long as thick, nearly 0.40 of abdomen; abdomen length : width 100 : 71, tergite smooth, shiny, with micropunctae.

Type locality : Tanjore

This species comes close to the *Kapaloides andamanensis* Mani from India, but differs in the smaller body size, black colour, antenna with 9 branches, branches rather greatly flattened, first funicular segment with a short and more stout branch, the second onward with branches more flattened and distinctly expanded, wider subapically and abruptly reduced apically; scutellum with median, shallow furrow, scutellar fork prominent and nearly 0.31 of the scutellum; abdomen ferruginous-brown, petiole black, smooth and without any striae.

*Kapaloides sabariensis Mani

(Fig. 126)

1974 *Kapaloides sapariensis,* Mani & Dubey, *Mem. School Ent.,* 3 : 42.

Male : Length 4.25 mm. Body black with metallic-green reflections; head black; antennae dark brown except the brownish-yellow scape, eyes and ocelli brownish-black; wings hyaline, with a conspicuous diffuse infumation around vein *st;* veins brown; coxa concololorous with thorax, rest of legs brown, petiole and abdomen black except the brown aedeagus and the tip of the abdomen.

Head width : length 100 : 30; head as wide as thorax, interorbital space to head with 71 : 100; ocellocular space 2 times ocellar diameter, interocellar space 3 times ocellar diameter; front ocellar space equal to ocellar diameter; vertex from the lateral ocelli forwards finely longitudinally striate, laterad of ocelli and occiput transversely finely striate, occiput, distinctly margined; viewed in front length : width 83 : 100, finely striate; clypeal fovea deep, supraclypeal line faint, clypeus trapezoid, almost striaght anteriorly, labrum with 9 digits on the margin; mandibles with 3 stout teeth on the right and 2 on the left; scrobe shallow, transversely striate; viewed from side length to width 100 : 45, gena to eye length 68 : 100, with longitudinally striae in the postorbital space, postorbital space reduced; antenna inserted in middle of face; antenna to head length 100 : 54, thinner apically than basally, segments 12 : 1.1.9.1; funicular segments 2-9 with long branches; scape short, 3 times as long as thick, slightly stouter in the middle; pedicel cup-shaped, 0.33 of scape; first funicular segment stouter apically than basally, 1.20 times as long as thick, 0.50 of scape;

* This species may belong to *Schizaspidia.*

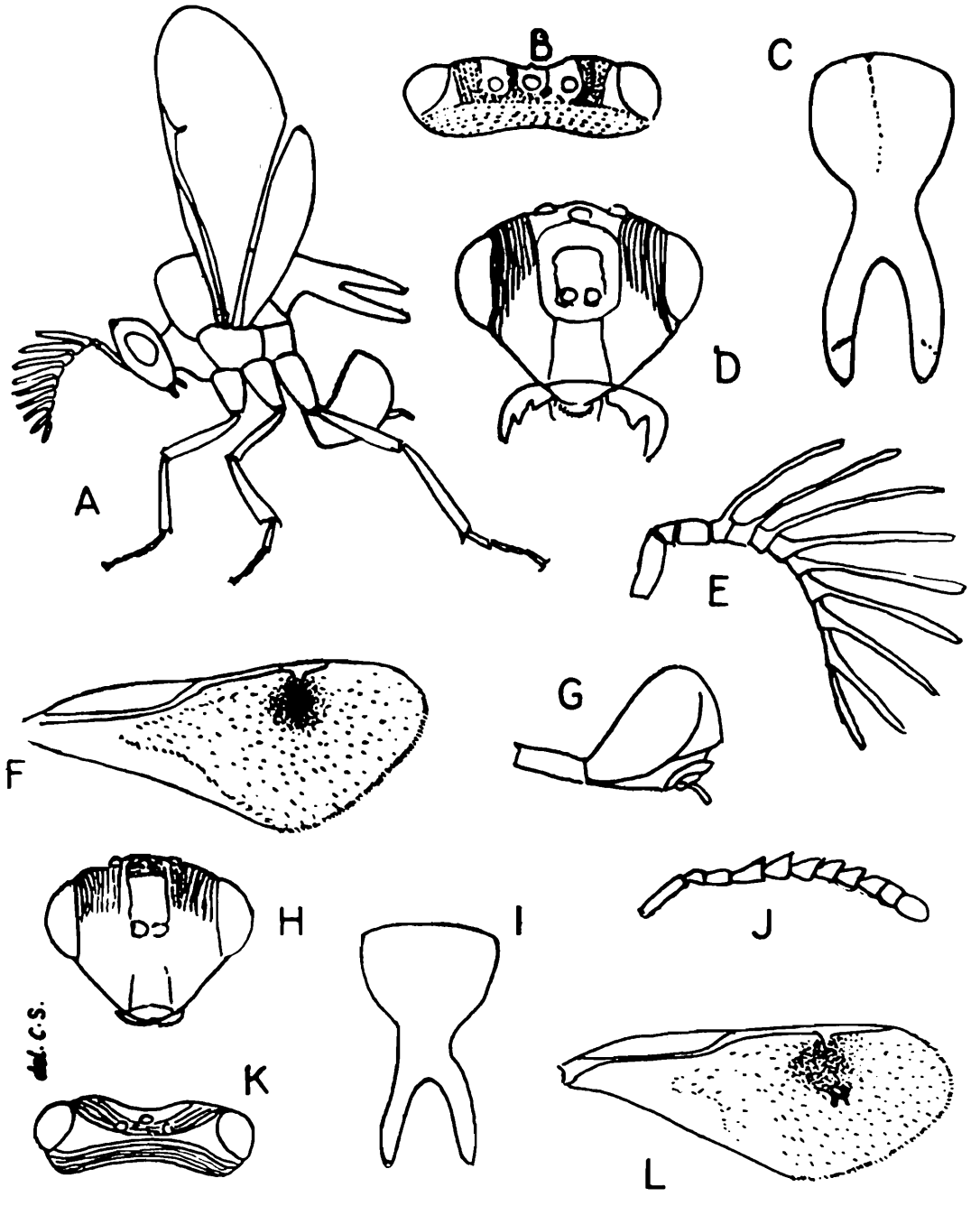

FIG. 126. *Kapaloides sabariensis* Mani : A-G. Male : A. Body; B. Head in dorsal view; C. Scutellum in dorsal view; D. Head in front view; E. Antenna; F. Fore wing; G. Abdomen; H-L. Female; H. Head in front view; I. Scutellum in dorsal view; J. Antenna; K. Head in dorsal view; L. Fore wing.

second segment 0.60 of the first, segments 3-5 subequal, segment 6 slightly over 5; 6-9 more slender than the preceding, 7 and 8 subequal, 9 longest, 1.30 times the preceding; club 10 times as long as thick and slightly thickened apically, subequal to preceding 3 segments combined; ratio of the branches from 2-9 respectively to length of club, 1.50, 1.75, 1.87, 1.72, 1.56, 1.34, 1.09.

Thorax coarsely reticulately-umbilicately punctate, pronotum concealed from above; mesoscutum width : length 100 : 45;

parapsidal furrows shallow, axillary suture shallow; scutellum with median longitudinal sulcus, scutellar fork prominent, about 0.36 of the scutellum, arms of fork 3 times their maximum width near base; tip of arm separated by a space 0.50 of their length; mesopleura smooth at extreme anterobasal angle followed by obscure transverse striation becoming reticulately punctate; fore wing length : width 100 : 42; veins *sm* : *m* : *pm* : *st* ratio 149 : 100 : 38 : 25; hind wing : fore wing 66 : 100; coxae subglobose, without sculpture; hind femur about 6 times as long as thick; tibia slightly over femur; tarsus 0.75 of tibia, tibial spur 0.50 of metatarsus, metatarsus nearly 0.40 of tarsus, second nearly 0.50 of metatarsus, third 0.70 of the second, fourth 0.70 of the third, fifth 2.60 times preceding.

Petiole smooth, slender, slightly over 3 times as long as thick, 0.50 of abdomen; abdomen length : width 100 : 67, tergite smooth and shining.

Female : Length 3.00 mm. Body black, with metallicbluish-green; head dark metallic-green, antennae reddish-brown, scape yellowish-brown, eyes and ocelli dark brown; wings hyaline but with a conspicuous diffuse infumation distinctly deeper than in male around vein *st;* veins brown, fore and middle coxae dark brown, hind coxae concolorous with thorax, femora dark brown, tibia and tarsi brown, petiole and first abdominal tergite metallic bluish-black, aedeagus, sternite and tergites dark brown.

Head from above width to length 100 : 30, head as wide as thorax, interorbital space to head width 71 : 100; ocellocular space 3 times ocellar diameter, interocellar space 2 times ocellar diameter, front ocellar space equal to ocellar diameter; vertex from the lateral ocelli forwards finely longitudinally striate, laterad of ocelli and occiput finely transversely striate, occiput margined; viewed in front length : width 79 : 100; clypeal fovea deep, supraclypeal line faint, clypeus oval, almost straight anteriorly; labrum with 9 digits on the margin; viewed from side length to width 100 : 33, gena to eye length 77 : 100, with longitudinal striae in the postorbital space; postorbital area reduced; antenna inserted almost in the middle of face; antenna to head length 100 : 67, thinner basally and stouter apically, segments 11 : 1.1.8.1; funicular segments 2-6 distinctly pectinate above; scape short, thinner at both the ends, about 3.60 times as long as thick; pedicel nearly 0.40 of scape; first funicular segment 1.30 times pedicel and about 0.50 of scape, second 1.20 times the first, 3 and 4 subequal, 5-7 subequal, 8 slightly shorter than 7 and more rounded; club 1.70 times preceding pyriform.

Thorax with finer reticulate umbilicate punctae than in male; pronotum concealed from above, mesoscutum width : length 100 : 62, sulcus more shallow than in male; scutellar arms prominent, about 0.36 of scutellum, arms widely separated, about 3 of their own

width near base; parapsidal furrows as in male; mesopleura as in male; fore wing length : width 100 : 38; veins *sm : m : pm : st* ratio 143 : 100 : 46 : 24; hind to fore wing 67 : 100; coxae subglobose; hind femur moderately stout, about 6 times as long as thick; tibia slightly over femur; tarsus 0.84 of tibia, metatarsus 0.40 of tarsus, spur 0.40 of metatarsus, second segment about 0.30 of metatarsus, third 0.90 of the second, fourth 0.75 of the third, fifth equal to 2 preceding.

Petiole smooth, slender, cylindrical, about 2.50 times as long as thick, 0.27 of abdomen, abdomen length : width 100 : 64; tergite shiny, with fine, obscure, widely separated micropunctae; ovipositor subequal to width of abdomen.

Type locality : Pamba Hills (Travancore)

This species comes close to *Kapaloides travancorensis* Mani, but differs in larger size, predominence of black colour over green; antenna with 8 branches, first funicular segment without any branch, branches more flattened, scutellum with shallow median carina, scutellar arm 0.36 of the scutellum; abdominal petiole smooth and without any longitudinal striae.

*Kapaloides travancorensis Mani

(Fig. 127)

1942 *Kapaloides travancorensis,* Mani, *Indian J. Ent.,* 4 (2) : 155.

Male : Length 4.00 mm. Body generally dark metallic-green; coxae metallic-green; head metallic-green; eyes brown; antennae dark brown.

Head uniformly pubescent, with a height about 0.71 of the greatest width, somewhat wider than thorax, longitudinally striate in front between the eye and scrobe, striations near the inner borders of the eye much longer and reaching lower down than those near scrobe; face below antenna and sides of cheek below eye smooth and not striate; scrobe transversely striate; sides of cheek below eye densely punctate behind; occiput transversely striate; sculpture in the middle lobe of mesonotum reticulate and in the lateral lobes transversely reticulate-striate; scutellum relatively small, sculptured similar to mesoscutum; median furrow not very deep; scutellar process narrow, not extremely widely separated; carina moderately large; petiole moderately long and longitudinally striate.

Type locality : Maddathoray, base of Western Ghats, Travancore

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* This species may fall under *Schizaspidia.*

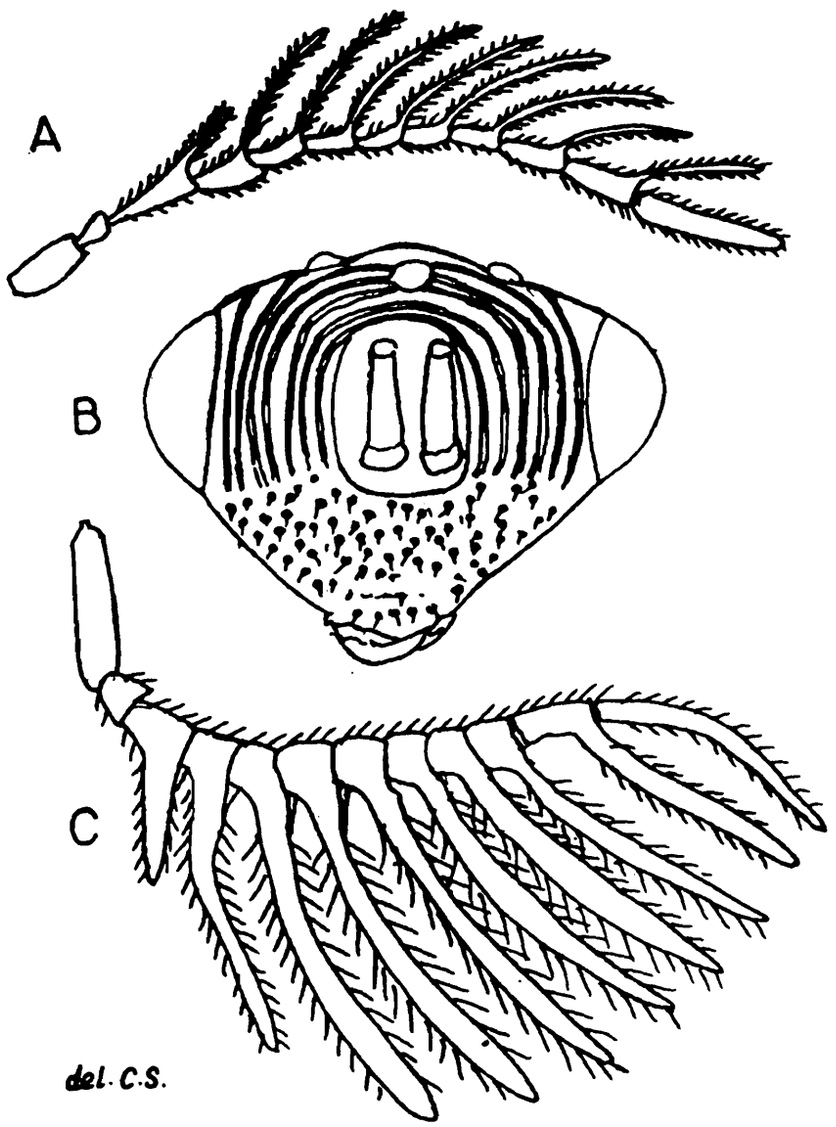

FIG. 127. A-B.*Kapaloides travancorensis* Mani, male : A. Antenna; B. Head front view; C. *Kapaloides andamanensis* Mani, male, antenna.

Parapsilogastrus Girault

1915 *Parapsilogaster,* Girault, *Mem. Queensland Mus.,* 4 : 232 (preoccupied in Diptera).

1946 *Parapsilogastrus,* Ghesquiere, *Rev. Zool. Bot. Africa,* 39 : 308.

Antennae in female with 11 segments, in male with 10 or 11 segments; thorax rugose; petiole not abruptly enlarged at tip but long and cylindrical.

Type-species : Parapsilogastrus faustus (Walker)

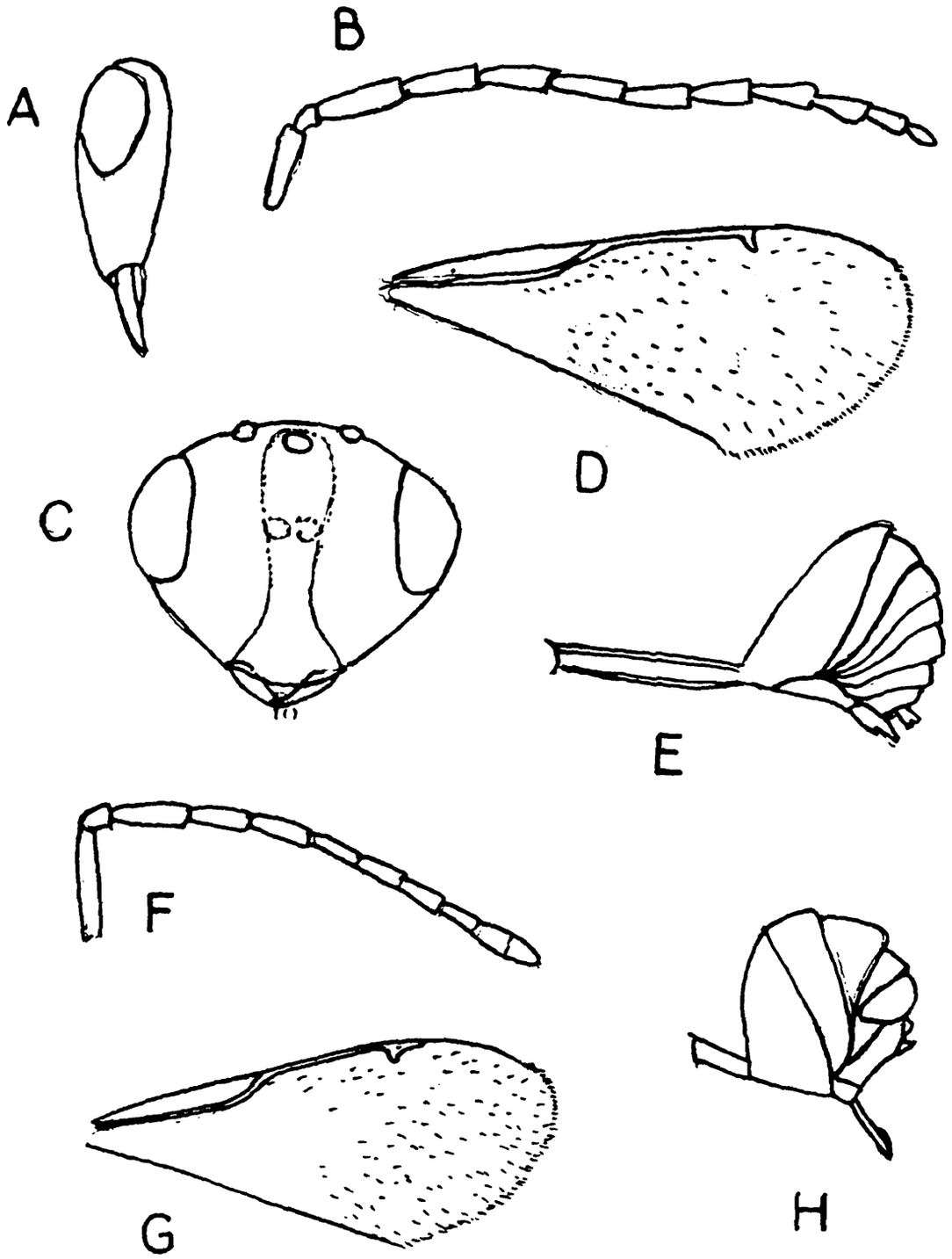

FIG. 128. *Parapsilogastrus laeviceps* (Gahan) : A-E. Male : A. Head in profile view; B. Antenna; C. Head in front view; D. Fore wing; E. Abdomen; F-H. Female : F. Antenna; G. Fore wing; H. Abdomen.

Parapsilogastrus laeviceps (Gahan)

(Fig. 128)

1940 *Parapsilogaster laeviceps*, Gahan, *Proc. US nat. Mus.*, 88 : 429-430.

1974 *Parapsilogaster laeviceps*, Mani & Dubey, *Mem. School Ent.*, 3 : 47.

Male : Length 2.50 mm. Body black; head black, eyes ferruginous-brown, ocelli dark brown; antenna, except ferruginous-brown scape and pedicel, dark brown; clypeus black, mandible yellowish-brown; fore wing hyaline, bare basally behind vein *sm*, this bare area with a triangular extension a little before the middle of the wing and reaching approximately the posterior border of the wing and 0.50 of vein *m*, the rest of wing rather densely ciliate; veins *sm* and *m* brown, *st* and *pm* pale yellow; coxae and all femora except tip black, rest of the legs yellow-brown; petiole and abdomen black.

Head from above width : length 100 : 26; head to thorax 100 : 75, interorbital space to width of head 60 : 100; ocellocular space 2 times ocellar diameter, interocellar space 3 times ocellar diameter, front ocellar space equal to ocellar diameter; vertex margined behind; vertex and occiput smooth, shiny; viewed in front length : width 85 : 100, scrobe moderately impressed, smooth; clypeus a little wider than long, anterior margin very strongly convexly rounded, clypeal fovea distinct; labrum with 4 digits; viewed from side length : width 100 : 40, gena nearly 0.80 of the eye length; postorbital space strongly margined; antenna cylindrical, thinner at apex than basally, segments 12 : 1.1.8.2; scape moderately stout towards apex, about 4 times as long as thick; pedicel short, nearly 0.25 of scape, as thick as long; first funicular segment longest, equal to 4 times pedicel; subequal to scape; segments 2 and 3 equal; segments 4-6 subequal, segments 7 and 8 subequal; club nearly 1 70 times preceding, first segment equal to last funicular segment, second segment about 0.50 of first; club terminating in short, obtuse, nipple-like process.

Mesoscutum irregularly rugose, scapula with fine transverse striae, parapsidal furrows moderately deep, axillary sutures strongly foveolate, scutellum 0.80 times as wide as long, sculpture as on prescutum, smooth at apex; propodeum smooth, mesopleura smooth; fore wing length : width 100 : 42; veins *sm* : *m* : *pm* ratio 166 : 100 : 17; *st* sessile; hind to fore wing 72 : 100; hind coxa 2 times as long as thick; femur moderately stout, 2 times coxae; tibia slightly over femur; tarsus slightly over tibia, spur 0.25 of metatarsus; metatarsus about 0.44 of tarsus, second segment 0.35 of metatarsus, third segment 0.70 of the second, fourth segment slightly shorter than third, fifth segment 2 times preceding.

Petiole 3 times hind coxa, 7 times as long as thick, longitudinally striate; abdomen viewed from above compressed, viewed from side width subequal to length.

Female : Length 2.75 mm. Body black; head black, eyes ferruginous-brown, ocelli brownish-black; antenna dark brown, clypeus black, mandibles yellowish-brown; wings hyaline; fore wing bare basally behind vein *sm*, this bare area with a triangular extension a little before the middle of wing and reaching approximately the posterior border of the wing and 0.50 of vein *m*, rest of wing rather

densely ciliate; veins *sm* and *m* brown, *st* and *pm* pale yellow; coxae and femora black, rest of the legs brown; petiole and abdomen black; ovipositor dark reddish-brown.

Head from above width : length 100 : 23; head to thorax 100 : 75, interorbital space to width of head 62 : 100, ocellocular space 2 times ocellar diameter, interocellar space 4 times ocellar diameter, front ocellar space 1.50 times ocellar diameter; vertex margined behind, vertex and occiput smooth, shiny; viewed in front slightly thicker than long, scrobe moderately impressed, smooth; clypeus a little broader than long, polished, its anterior margin very strongly convexly rounded; clypeal foveae deep, supraclypeal area distinctly set off by shallow sutures from toruli to clypeal foveae; labrum with 4 digits in the middle and one much longer on either side; viewed from side length : width 100 : 42, gena nearly 0.50 of eye length, postorbital space strongly margined; antenna cylindrical, slightly thinner at apex, segments 12 : 1.1.8.2; scape moderately stout at apex, about 6 times as long as thick; pedicel short, 0.27 of scape, slightly longer than thick; first funicular segment longest, 2.50 times pedicel, segments 2 and 3 subequal, segments 4 and 5 subequal, segments 6 and 7 subequal; club nearly 1.50 times preceding, first club segment nearly 0.50 of last funicular segment, second segment 2 times the preceding, with short obtusely nipple-like process at apex.

Mesoscutum finely irregularly rugose, scapula with fine transverse striae, parapsidal furrows complete, moderately deep; sutures separating axillae from scutellum strongly foveolate; scutellum 0.80 as wide as long, sculptured like prescutum, smooth at apex; propodeum mostly smooth except a raised simple carina in the middle; mesopleura smooth; fore wing length : width 100 : 41; veins *sm* : *m* : *pm* ratio 114 : 100 : 14; *st* sessile; hind wing : fore wing 72 : 100; hind coxa subglobose, hind femur moderately stout towards apex, about 6 times as long as thick; tibia slender, slightly over femur; tarsus subequal to tibia, tibial spur nearly 0.30 of metatarsus; metatarsus 0.50 of tarsus, second segment about 0.33 of metatarsus, third segment 0.70 of the second, fourth segment 0.50 of the third, fifth segment 2.25 times preceding.

Petiole 2 times hind coxae and 3 times as long as thick, viewed from above moderately compressed, viewed from side width subequal to length; ovipositor 0.40 of width of abdomen.

Type locality : Ceylon

Distribution : Ceylon, India : Cardamom Hills, Anamalai Hills, Malabar; Nepal : Godavari, Nagarjuna Hills.

Psygmatocera Enderlein

1925 *Psygmatocera,* Endérlein, *Ent. Mitteil.,* 1 : 146.

1938 *Psygmatocera,* Mani, *Cat. Indian Ins.,* 23 : 149.

1952 *Psygmatocera,* Risbeck, *Mem. Inst. Sci. Madagascar,* (E) 2 : 407.

Antennae with 12 segments; scape slender, funicular segments in male with slender appendages, terminal 3 segments elongate; in female club with 2 segments, funicular segments with tooth-like projections; scutellum behind with a forked prolongation; abdomen compressed; petiole very long; legs slender; scrobe deep.

Type-species : Psygmatocera ceyloni Enderlein

Psygmatocera ceyloni Enderlein

1925 *Psygmatocera ceyloni,* Enderlein, *Ent. Mitteil.,* 1 : 146.
1938 *Psygmatocera ceyloni,* Mani, *Cat. Indian Ins.,* 23 : 149.

Type locality : Ceylon : Bentotta (Kandy)

Schizaspidia Westwood

1835 *Schizaspidia,* Westwood, *Proc. zool. Soc. London,* 3 : 69.
1904 *Schizaspidia,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 268, 269.
1909 *Schizaspidia,* Schmiedeknecht, *Gen. Ins.,* 97 : 76.
1935 *Schizaspidia,* Mani, *Rec. Indian Mus.,* 37 : 253.
1938 *Schizaspidia,* Mani, *Cat. Indian Ins.,* 23 : 75.

This genus resembles *Stilbula,* but is distinguished by the absence of metapleural hump above; antennae with 13 segments; segments 2 and 3 subequal; antennal segments 4-10 pectinate; terminal 3 segments constitute club; scutellum spined, bidentate or produced into long processes extending over the abdomen; propodeum unarmed, without teeth; metapleura without hump-like elevation above; petiole about 0.33 of abdomen; abdomen depressed.

Type-species : Schizaspidia furcifera Westwood

Schizaspidia atkinsoni Mani & Dubey

(Fig. 124)

1974 *Schizaspidia atkinsoni,* Mani & Dubey, *Mem. School Ent.,* 3 : 36.

Female : Length 5.20 mm. Body dark metallic-blue-green; head nearly black with blue reflections; antennae brownish-black; wings hyaline but with a conspicuous diffuse browning at and behind vein *st* becoming fainter behind; veins dark brown; coxae concolorous with thorax, rest of legs brown; petiole brownish-black to very dark brown; abdomen black.

Head from above 100 : 31, width 0.84 of thorax width; interorbital space 0.74 head width; ocellocular space 2 times ocellar diameter, interocellar space 3 times ocellar diameter, front ocellar space equal to ocellar diameter; vertex from the lateral ocelli forwards finely longitudinally striate, laterad of ocelli and occiput finely

transversely striate; occiput faintly margined above; viewed in front 100 : 63, frons finely striate, face below smooth, with sparse microscopic punctae; clypeus trapezoid, almost straight anteriorly; viewed laterally 100 : 50, gena 0.50 of orbit, without carina, obliquely closely striate; postorbital space reduced; antennae inserted in the middle of face, segments cylindrical; scape short, stouter apically than basally; pedicel a little shorter than scape; first funicular segment 7 times as long as thick, second funicular segment 0.70 of the first, third a little shorter, fourth and fifth subequal to third.

Thorax almost as long as thick; scutellum 0.30 of thorax, scutellar process subequal to scutellum, teeth narrow, diverging, teeth 0.30 of the process; rugose, process with a Y-shaped carina; propodeum more coarsely rugose than mesonotum and scutellum; fore wing 100 : 30; veins *sm* : *m* : *pm* ratio 266 : 100 : 30 *st* triangular, discal cilia sparse and fine, fringe absent; hind wing 0.55 of fore wing; legs slender, coxae subglobose; hind femur 7 times as long as thick; hind tibia 1.75 times femur, tarsus subequal to femur

Abdomen viewed from side 2 times as long as thick; petiole 0.55 of abdomen, 0.70 of thorax, slender, elongate, cylindrical, smooth, abruptly thicker in apical 0.50.

Type locality : Dehra Dun

This species is separated from the others described here by its much larger size, relatively longer first funicular segment, and relatively shorter abdominal petiole.

Schizaspidia furcifera Westwood

1835 *Schizaspidia furcifera,* Westwod, *Proc. zool. Soc. London,* 3 : 69.
1874 *Schizaspidia furcifera,* Westwood, *Thes. ent. Oxon.,* 151. pl. xxviii flg. 2.
1909 *Schizaspidia furcifera,* Schmiedeknecht, *Gen. Ins.,* 97 : 76.
1938 *Schizaspidia furcifera,* Mani, *Cat. Indian Ins.,* 23 : 75.

"Capite et thorace aeneis; facie canali profundo pro receptione antennarum, his fulvo-albidis, articulo secundo et tertio parvis ferae aequalibus, quarto ad decimum intus acute producto-serratis, undecimo, ut videtur, 3-annulato; mesothoracis scuto et parapsidibus semicirculariter striatus; scutello et postscutello longitudinaliter sulcatis; hoc in cornu retro producto dimidium abdominis aequante, apice bifurcato; abdomine brevi cyaneo, apice fulvescente; pedibus fulvo-albidis; alis hyalinis; anticis nubila transverse pone medium brunnescente (Femina). Long. corp. lin 2¾; expans. alar. antic. lin 5."

Type locality : Bengal

Schizaspidia indica Mani

1935 *Schizaspidia indica,* Mani, *Rec. Indian Mus.,* 37 : 254.
1938 *Schizaspidia indica,* Mani, *Cat. Indian Ins.,* 23 : 76.

Male : Length 4.00 mm. Body generally black, with dark metallic-green reflections; head black; coxa concolorous with thorax; rest of legs brown; antennae brownish-yellow; wings hyaline; veins very dark brown; abdomen dark metallic-green, terminal segment somewhat brown along the margins.

Head coarsely, umbilicately punctate; antennae elongate, densely hairy, segments cylindrical; pedicel short, transverse; vein *m* shorter than *sm*, stigma sessile; *pm* very long; scutellar process bidentate, about as long as the petiole.

Type locality : Assam.

This species differs from *Schizaspidia furcifera* Westwood in its larger body size, general body colour and in the umbilicate punctation on thorax.

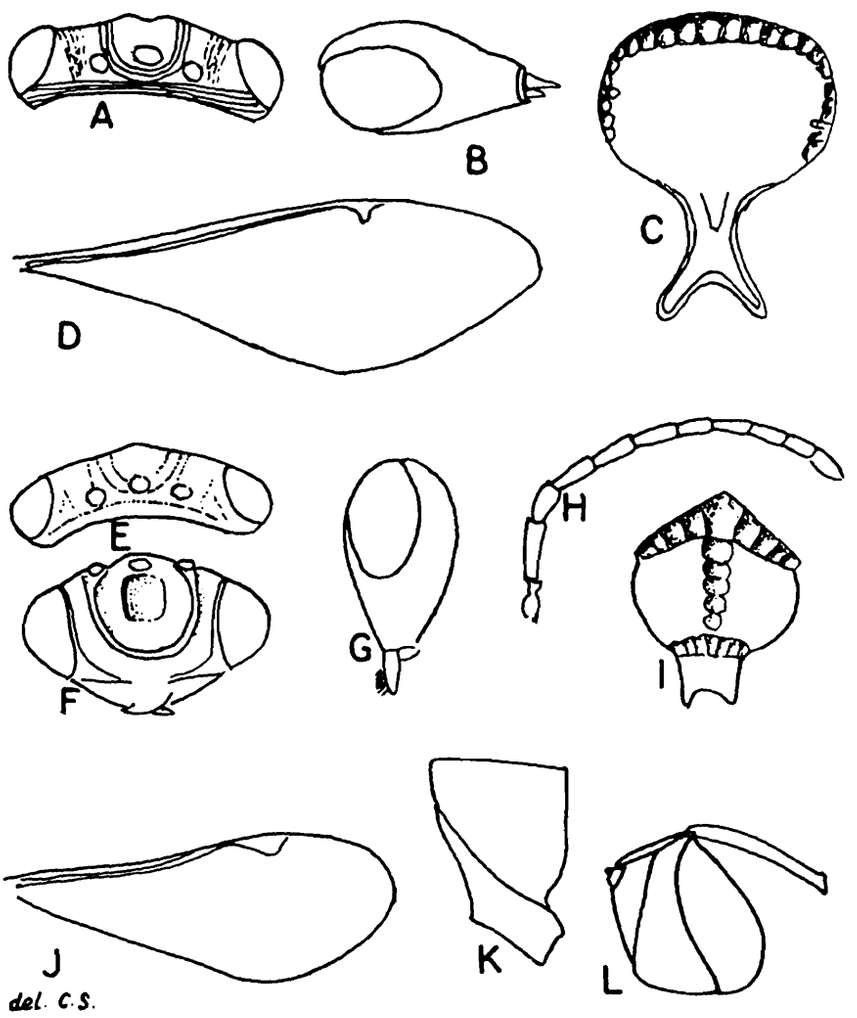

FIG. 129. A-D. *Schizaspidia atkinsoni* Mani & Dubey, female : A. Head in dorsal view; B. Head in profile view; C. Scutellum; D. Fore wing; E-L. *Schizaspidia mysorensis* Mani & Dubey, female : E. Head in dorsal view; F. Head in front view; G. Head in profile view; H. Antenna; I. Scutellum in dorsal view; J. Fore wing; K. Scutellum in lateral view; L. Abdomen.

Schizaspidia manipurensis Clausen

1928 *Schizaspidia manipurensis,* Clausen, *Proc. ent. Soc. Washington,* 30 : 83, 85.
1938 *Schizaspidia manipurensis,* Mani, *Cat. Indian Ins.,*23 : 76.

Type locality : Manipur : Assam.

***Schizaspidia mysoreensis** Mani & Dubey

1974 *Schizaspidia mysorensis,* Mani & Dubey, *Mem. School Ent.*, 3 : 37.

Female : Length 3.00 mm. Body black, with metallic-coppery reflections, head black, eyes and ocelli reddish-black, antennae dark brown, mandible brown, wings hyaline with a brown stigmal cloud, veins dark brown, coxae concolorous with thorax, rest of legs brown, petiole yellowish-brown with a black band at 0.75 of its length, abdomen except black first tergite, brown.

Head from above width : length 100 : 25, head to thorax subequal, interorbital space to head width 72 : 100, ocellocular space 2 times ocellar diameter, interocellar space 3.70 times ocellar diameter, front ocellar space equal to ocellar diameter; vertex from the lateral ocelli forwards finely longitudnally striate, laterad of ocelli and occiput finely transversely striate; viewed in front length : width 65 : 100, finely striate; clypeal fovea very deep, supraclypeal line faint, clypeus trapezoid, almost straight anteriorly, labrum with 11 digits on the margin; viewed from side length to width 100 : 55, gena to eye length 63 : 100, with obliquely longitudinal striae, postorbital space reduced; antenna inserted in middle of face; antenna to head length 100 : 33; segments 12, cylindrical; scape short, 1.70 times as long as thick, stouter basally than apically; pedicel cup-shaped, as thick as long, 0.50 of scape, stouter apically than basally; first funicular segment longest, 4 times as long as thick, about 5 times as long as pedicel, second 0.60 of the first; segments 3-5 subequal; segments 6-8 subequal; ninth 0.80 of the eighth; club solid, 1.23 times the preceding.

Thorax almost as thick as long; coarsely umbilicately punctate, punctae separated by a distance shorter than their diameter; parapsidal furrows foveolate, axillary and scutellar sutures foveolate; scutellum with a median longitudinal sulcus; propodeum without median carina, sculpture as on the thorax; scutellum 0.40 of thorax, scutellar process bluntly and shortly bifurcate, process about 0.27 of scutellum; fore wing length : width 100 : 39; veins *sm* : *m* : *pm* ratio 125 : 100 : 25; *st* triangular; hind to fore wing 63 : 100; coxae subglobose; hind femur 5 times as long as thick; tibia slightly over femur, tarsus 0.85 of tibia, metatarsus 0.36 of tarsus, second about 0.50 of metatarsus, third 0.60 of the second, fourth 0.70 of the third, fifth 2.50 times the preceding, spur 0.30 of metatarsus.

Petiole smooth, slender, cylindrical, about 9 times as long as thick, almost equal to abdomen and equal to thorax; viewed from side length : width 100 : 54, tergite smooth.

* This species may belong to *Stilbula.*

Type-locality : Mysore

This species differs from the *Schizaspidia convergens* (Walker) from Ceylon in the first funicular segment and in the antennal segments being cylindrical. From *Schizaspidia antennata* Gahan from Malaya it differs in the smaller stigmal cloud of fore wing; petiole much longer than the hind coxae; smooth uniformly thick, longer first flagellar segment.

Schizaspidia scutellaris Masi

1927 *Schizaspidia scutellaris,* Masi, *Konowia,* 5 : 370.
1938 *Schizaspidia scutellaris,* Mani, *Cat. Indian Ins.,* 23 : 76.

Female : Length 3.30-3.40 mm. Body generally, head, and thorax and petiole blackish-aeneous; dorsum partly shiny-purple; abdomen green, flagellum castaneous, scape, veins and legs yellow; stigmal spot on fore wing yellowish-brown and exceeding 0.33 of wing width.

Head to thorax width 96 : 100; front ocellus, tangential to lateral ocelli; vertex distinctly margined; thorax gibbous; mesonotum transversely striate; scutellum cordate, with appendage stout, length to scutellum ratio 100 : 46; deeply bifurcate, branches equa; scutellum with about 12 carinae, dorsellum with transverse carinae dividing into 9 subdivisions; vein *pm* slightly shorter than *m;* petiole equal to propodeum, abdomen equal to thorax.

Type locality : Kankau : Formosa (Taiwan)

Distribution : Kankau : Formosa; India : Calcutta

*Schizaspidia tanjorensis** Mani & Dubey

(Fig. 130)

1974 *Schizaspidia tanjorensis* Mani & Dubey, *Mem. School Ent.,* 3 : 39.

Female : Length 5.00 mm. Body black, with dark metallic-green reflections; head black with metallic-green reflections, eyes and ocelli brownish-black; antenna dark ferruginous-brown, clypeus black, mandible yellowish-brown; wings hyline, with a conspicuous dark brown stigmal cloud, veins brown; fore and middle coxae brown, hind coxae brownish-black, rest of leg yellowish-brown; petiole pale brown, with a conspicuous black band in the middle; abdomen dark brown, except the black first tergite.

Head from above width : length 100 : 24, slightly less wide than thorax; interorbital space to head width 74 : 100, ocellocular space 2 times ocellar diameter, interocellar space 4.30 times ocellar diameter, front ocellar space 2 times ocellar diameter; vertex from the lateral ocelli forwards longitudinally striate, laterad of ocelli and

* This species may belong to *Stilbula.*

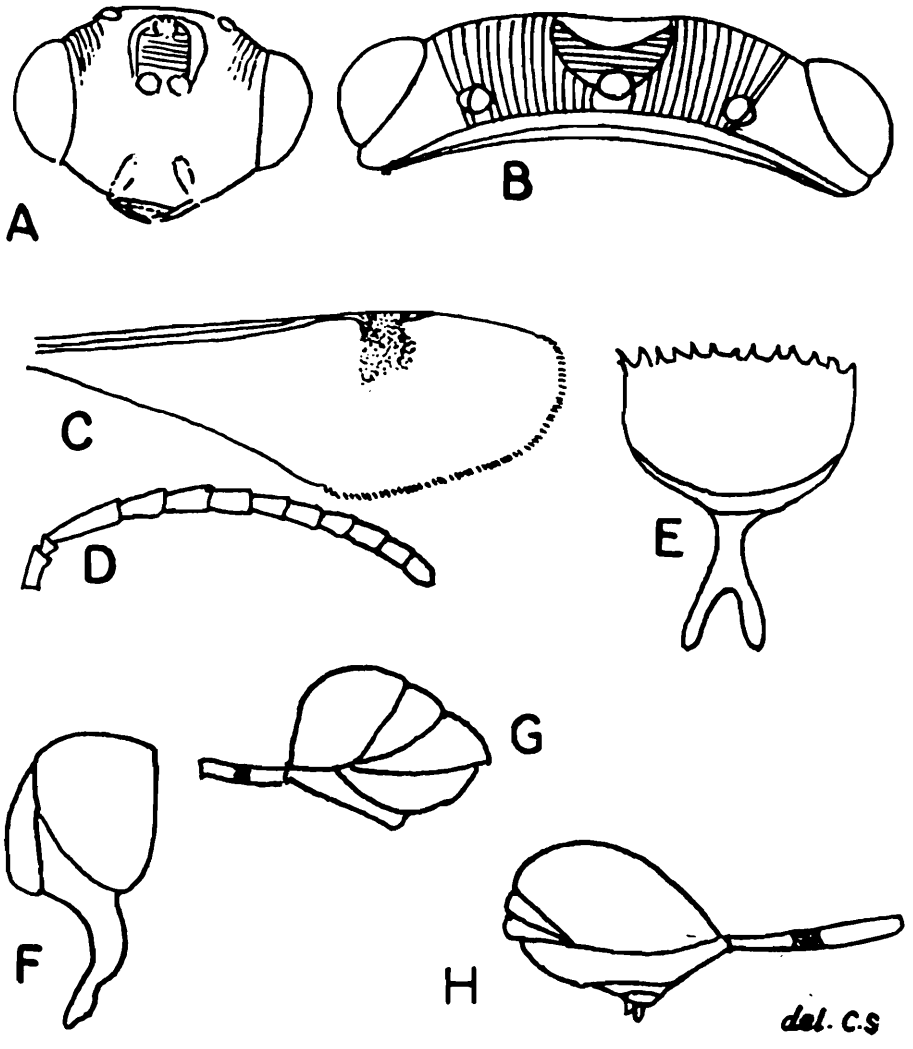

FIG. 130. *Schizaspidia tanjorensis* Mani & Dubey : A-G. Female : A. Head in front view; B. Head in dorsal view; C. Fore wing; D. Antenna; E. Scutellum in dorsal view; F. Scutellum in lateral view; G. Abdomen; H. Male : Abdomen.

occiput transversely longitudinally finely striate; viewed in front length : width 67 : 100, striate, never below the level of antennal insertion; scrobe moderately impressed, with transverse striae and surrounded by fine longitudinal striae; clypeus trapezoid, anterior margin straight; clypeal fovea very deep, supraclypeal line faint; labrum with 9 digits; viewed from side length to width 100 : 45, gena to eye length 50 : 100, postorbital space with longitudinal striae; antenna inserted slightly above the middle of face; antenna to head length 100 : 43, segments cylindrical, 12 : 1.1.9.1; scape short, 1.80 times as long as thick; pedicel rectangular, about 0.50 times as thick as long; first funicular segment longest, nearly 4 times as long as thick and about 4 times pedicel, second segment 0.65 of the first,

third segment nearly 0.85 of the second, segments 4-6 subequal; segments 7-9 subequal; club solid, about 1.25 times preceding segment.

Thorax slightly longer than thick, scutum coarsely closely umbilicately punctate; scapula smooth except for few scattered punctae laterally and in front; parapsidal furrows complete and deep, axillary and scutellar sutures foveolate; scutellum with a shallow median longitudinal sulcus, about 0.37 of thorax; scutellar fork prominent, about 0.46 of scutellum, arms separated from each other by their own length; propodeum without median carina, sculpture as on mesonotum; mesopleura smooth, with micropunctae, margin deeply punctate; fore wing length : width 100 : 34; veins *sm* : *m* : *pm* ratio 176 : 100 : 29; *st* triangular, with brown infumation; hind wing : fore wing 62 : 100; hind coxae subglobose; hind femur moderately stout, 7 times as long as thick; tibia subequal to femur; tarsus 0.85 of tibia, spur short, about 0.25 of metatarsus; metatarsus about 0.40 of tarsus, second segment about 0.45 of metatarsus, third segment about 0.70 of the second, fourth segment 0.45 of the third, fifth about 3.50 times the preceding.

Petiole smooth, slender, cylindrical, slightly thickened in the middle; 6 times as long as thick, nearly 0.42 of abdomen, viewed from above moderately compressed, viewed from side length : width 100 : 70, first tergite subopaque.

Male : Length 4.00 mm. Body colour as in female, except with greater metallic-green reflections; eyes ferruginous-red, ocelli brownish-black; antenna dark ferruginous-brown, fore and middle coxae brownish-black, hind coxae black, other characters as in female.

Head from above width : length 100 : 23; head to thorax subequal; viewed from front width : lenght 100 : 59; antenna inserted slightly above from the middle of the head, antenna to head length 100 : 25, segments 12 : 1.1.9.1; relatively longer, slender, cylindrical; scape short, 2 times its own thickness; pedicel subglobose, nearly 0.50 of scape; first funicular segment longest, about 5 times as long as thick and about 5 times pedicel, second 0.65 of first, 2-5 subequal, 6-8 subequal, ninth 0.86 of the eighth; club solid, subequal to preceding.

Scutum punctate as in female, scapula in the middle smooth almost as in female but with moderately more numerous punctae; scutellum about 0.33 of thorax; rest as in female.

Petiole smooth, slender, cylindrical, moderately stout in the middle about 9 times as long as thick, petiole to abdomen 78 : 100; abdomen viewed from above strongly compressed; viewed from side length : width 100 : 67, first tergite with scattered micropunctae.

Type locality : Tanjore

This spcecies comes close to *Schizaspidia antennata* Gahan, but differs in the larger size, fore wing about 3 times as long as wide, hyaline, marginal cilia well developed; flagellum not serrate, first funicular segment longest about 4 times as long as pedicel, flagellar tooth absent; clypeal and except the rugose margin; scutellar process about 0.46 of scutellum; petiole 3 times hind coxae, moderately thickened in the middle, smooth, without any sculpture.

FAMILY CLEONYMIDAE

1883 *Cleonymidae*, Walker, *Mon. Chalc. Ent. Mag.*, 2 : 370.
1837 *Cleonymidae* (partim), Walker, *Ent. Mag.*, 4 : 349.
1846 *Eupelmidae* (partim), Walker, *List Chalcids Brit. Mus.*, 1 : 52.
1856 *Cleonymidae* (partim), Förster, *Hym. Stud.*, 2 : 19, 24, 46.
1875 *Cleonymides*, Thomson, *Hym. Skand.*, 4 : 217.
1878 *Cleonymides*, Thomson, *Hym. Skand.*, 5 : 3.
1886 *Cleonymides*, Howard, *Ent. Amer.*, 2 : 33,34.
1899 *Cleonymidae*, Ashmead, *Proc. ent. Soc. Washington*, 4 : 200.
1904 *Cleonymidae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 280.
1909 *Cleonyminae*, Schmiedeknecht, *Gen. Ins.*, 97 : 149.
1958 *Cleonymidae*, Boucek, *Sb. Ent. odd. Nar. Mus. Prazae*, 32 : 353, 386.
1961 *Cleonymidae*, Hedqvist, *Ent. Tidsk.*, 82 (1/2) : 91-110.
1963 *Cleonymidae*, Hedqvist, *Stud. Forest Suecica*, 11 : 50.
1967 *Cleonymidae*, Hedqvist, *Mitt. Schweiz. ent. Ges.*, 39 (3-4) : 180.
1969 *Cleonymidae*, Graham, *Brit. Mus. Bull. Ent.* (Suppl.), 16 : 35.
1970 *Cleonymidae*, de Santis, *Rev. Mus. La Plata*, 11 (92) : 21-26.
1979 *Cleonymidae*, Krombein *et al.*, Hymen. N. America, 1 : 774.

Since Walker erected the family, Förster included in it a number of heterogenous genera, now referred to other families. In 1878 Thomson considered the group as a subtribe of Pteromalina and included 5 genera, four of which are not Cleonymids, but true Pteromalids. In 1904 Ashmead redefined the family and his ideas were followed by Schmiedeknecht in 1909. In his revision, Boucek placed it as a subfamily of the Pteromalidae and this was followed by Graham in 1969. The subfamily Chalcedectinae, reported as best developed in Australia and South America, differs from the typical Cleonymids in the swollen hind femora, which are serrate or dentate. The family is treated here separately to avoid over-burdening the already unwieldly large and complex Pteromalidae.

Orbits strongly converging above; annellus, funicular segments 7 or without annellus and 8 funicular segments; club entire or with 2-3 segments; mandibles with 2-3 teeth; pronotum large, usually about 0.50 of mesonotum, conically produced in front; parapsidal furrows complete or incomplete; prepectus usually large; hind tibial spurs double; either the fore or hind femora greatly swollen, serrate or dentate beneath or both swollen and only the hind femora dentate, or hind legs very long with elongate, cylindrical coxae and *st* short but *pm* reaching wing tip.

KEY TO SUBFAMILIES

1.	Abdomen sessile or with only a very short petiole, which is never a long one	2
	Abdomen petiolate	3
2.	Hind femora incrassate, usually dentate or finely denticulate beneath; abdomen depressed; ovipositor only rarely exserted; antennae at the most with only 11 segments	*Chalcedectinae*
	Hind femora not incrassate and not dentate beneath; fore femora often swollen, excised or dentate apically; ovipositor often exserted; antennae with 11-13 segments	*Cleonyminae*
3.	Abdomen strongly compressed, with long ovipositor; legs slender; hind legs greatly elongate; vein *m* long, *pm* extending to tip of wing, *st* short; antennae with 11 segments, inserted near clypeus	*Pelecinellinae*

SUBFAMILY CHALCEDECTINAE

1889 *Polychromminae,* Ashmead, *Proc. ent. Soc. Washington,* 1 : 226.
1895 *Chalcedectinae,* Ashmead, *Proc. ent. Soc. Washington,* 3 : 230.
1898 *Chalcodectinae,* Dalla Tore, *Cat. Hym.,* 5 : 186.
1899 *Chalcedectinae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 201.
1904 *Chalcedectinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 280, 281.
1909 *Chalcedectini,* Schmiedeknecht, *Gen. Ins.,* 97 : 150.
1968 *Chalcedectinae,* Steffan, *Entomophaga,* 13 : 204.
1979 *Chalcedectini,* Krombein *et al.,* Hymen. N. America, 1 : 775.

Hind femora strongly swollen, mostly dentate or serrate beneath; abdomen sessile. Mostly developed in South America and Australia, partly in Africa also. Included genera : *Chalcedectus* Walker, *Cleptimorpha* Walker, *Chalcidiscelis* Ashmead, *Systolomorpha* Ashmead, *Amotura* Cameron, *Agamerion* Haliday and *Euchrysia* Westwood.

SUBFAMILY CLEONYMINAE

1897 *Cleonymidae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 201, 202.
1904 *Cleonyminae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 280, 282.
1909 *Cleonymini,* Schmiedeknecht, *Gen. Ins.,* 97 : 154.
1979 *Cleonymini,* Krombein *et al.,* Hymen. N. America, 1 : 774.

Fore femora more or less thickened, dentately incised; pronotum large, elongated and narrowed neck-like.

KEYS TO TRIBES

1.	Club asymmetric	2
	Club symmetric	3
2.	Antennae with 11 segments : 1.1.1.7.1; fore femora not toothed below; scrobe almost or completely absent	*Cleonymini*
	Antennae with 12 segments : 1.1.1.6.3	*Heydenini*

3.	Axillae produced forwards of the scutellum	4
	Axillae not produced forwards of scutellum	5
4.	Antennae with 10 segments : 1.1.2.5.1; legs slender, elongate; abdomen elongate, ovipositor long; eyes very large; hind tibial spur one	*Luricini*
	Antennae with 13 segments : 1.1.1.7.3; fore femora swollen, with large setae below; thorax compressed dorsally; inner orbital border produced with transverse keels	*Ooderini*
5.	Antennae with 13 segments	6
	Antennae with 11-12 segments	7
6.	Pronotum longer than wide; antennae with 13 segments : 1.1.1.7.3; (or with 12 segments : 1.1.1.6.3; when abdomen membranous)	*Heydenini*
7.	Petiole long; abdomen elongate and compressed; legs long	8
	Petiole very short; abdomen not compressed; legs stout; femora swollen	9
8.	Petiole with transverse striations and long hairs; ovipositor long; prepectus very large; inner orbital border produced and with transverse keels	*Leptofoenini*
9.	Abdomen sclerotized, with median dorsal longitudinal carina; fore femora swollen, with a tooth; antennae with 11 segments : 1.1.1.7.1	*Lyciscini*
	Abdomen tubular; legs sclerotized and without the median longitudinal carina; legs slender, but sometimes fore femora swollen; antennae with 11 segments : 1.1.1.7.1	*Thaumasurini*

The subfamily Cleonyminae includes a number of interesting genera like *Heydenia* Först., *Lycisca* Spin., *Epistenia* Westw., *Cleonymus* Latr., *Cameronella* Dalla Torre, *Paracleonymus* Masi, *Ptinobius* Ashm., *Cea* Haliday, *Tomicobia* Ashm., *Thaumasura* Westw., *Zapachia* Först., *Acrocornus* Först., *Caudonia* Walk., *Pachycaudonia* Ashm., *Notanisius* Walk., *Dinora* Ashm., *Merostenus* Walk., *Trigonoderus* Westw., *Anolyphis* Först., *Macromesus* Walk., *Pegopus* Först., *Photimus* Thomson, etc.

Oodera Westwood

1874 *Oodera,* Westwood, *Thes. Ent. Oxon.,* 145.
1904 *Oodera,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 288, 290.
1909 *Oodera,* Schmiedeknecht, *Gen. Ins.,* 97 : 176.
1951 *Stellophora,* Risbec, *Mem. Inst. Fr. Afr. Noire,* 13 : 239.
1952 *Oodera,* Risbec, *Mem. Inst. Sci. Madagascar,* (E) 2 : 75.
1961 *Oodera,* Hedqvist, *Ent. Tidskr.,* 82 (1) : 97.

This genus is separated from *Ooderella* Ashmead by the long exserted ovipositor; wings present; fore femora swollen, armed with

minute spines beneath; hind tibiae and metatarsus not compressed; inner orbital border raised up with a row of short transverse carinae; axillae advanced in front of scutellar base; antennae with 13 segments : 1.1.1.7.3; club symmetric.

This genus was placed in then Eupelmiirae by Ashmead and Schmiedeknecht. Represented best in South America.

Type-species : Oodera gracilis Westwood

Oodera ahoma (Mani & Kaul)

(Fig. 131)

1973 *Lycisca ahoma,* Mani & Kaul, *Mem. School Ent., 2 : 53.*
1978 Oodera ahoma, Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 448.

Female : Length 8.50 mm. Head, thorax, fore coxae and femora black, with some metallic-green reflections; face metallic-green; abdomen brownish-black; scape brown in ventral basal 0.50; flagellum brownish-black; fore tibia and tarsus brown; middle and hind legs dark reddish-brown; fore wings hyaline, with faint obscuration in the middle, especially along the speculum; venation brown.

Head viewed above width to length 100 : 60; ocellocular space about 1.50 times ocellar diameter; front ocellar space nearly equal to ocellar diameter; front ocellus situated within scrobe; vertex finely, transversely rugose, with a shallow median sulcus extending from the front ocellus to occiput; occiput striolate; head viewed in front width almost equal to height; interorbital space below about 3 times that above; frons closely, deeply reticulately-punctate, punctae becoming conspicuously coarsely, transversely rugose between the inner orbital borders and scrobe above the middle of eyes; scrobes in the form of an inverted Y; head viewed from side height to thickness 100 : 66; gena about 0.40 of eye, genal carina present, malar space closely striolate, with a few scattered punctae; antennae inserted far below lower orbital borders; segments 11 : 1.1.8.1; first funicular segment equal to pedicel; funicular segments 2-3 subequal and about 1.50 times the first segment; fourth funicular segment almost 0.60 of the third; fifth segment about 0.80 of the fourth; sixth segment about 0.75 of the fifth; segments 7-8 subequal and about 0.80 of the width; club elongate-oval, about 1.80 times the last funicular segment.

Thorax large; pronotum, scutum and scutellum ratio 75 : 100 : 38; pronotum well developed, viewed from above hexagonal, length to width 100 : 83; seen from the side about 1.60 times as long as wide, with faint median longitudinal sulcus behind the basal 0.33, with fine sculpture and longitudinally striate at the sides and behind; scutum length to width 100 : 88; parapsidal furrows complete;

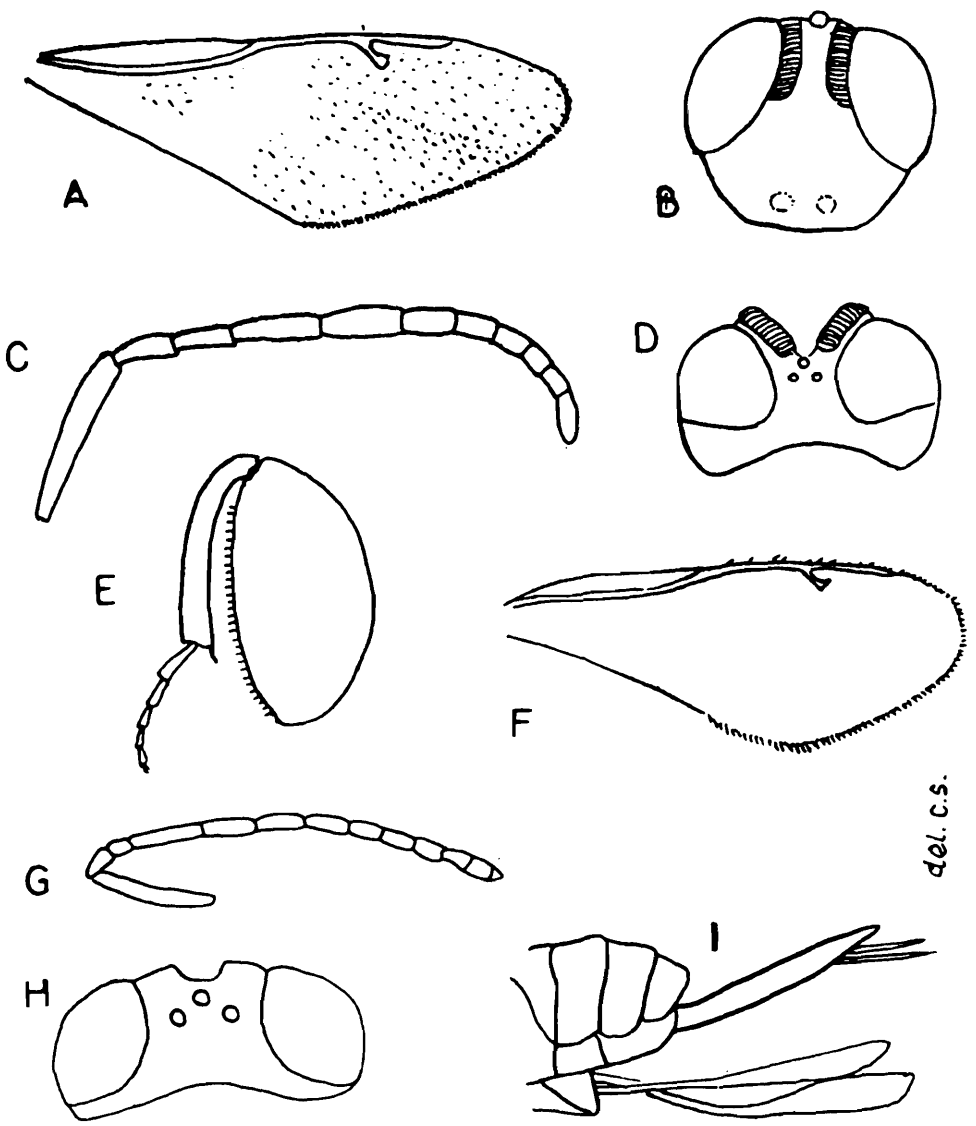

FIG. 131. A-E. *Oodera ahoma* (Mani & Kaul), female : A. Fore wing; B. Head in front view; C. Antenna; D. Head in dorsal view; E. Fore leg; F-I. *Thaumasura indica* Mani & Kaul, male : F. Fore wing; G. Antenna; H. Head in dorsal view; I. Apex of abdomen.

reticulately punctate in front and transversely reticulate-striate behind; axilla reticulate in front and with fine microsculpture behind; scutellum more or less uniformly, longitudinally reticulately striate, width to length 100 : 75; propodeum with a short median carina and coarsely, longitudinally rugose at the sides; fore wing about 3 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 180 : 100 : 80 : 30; hind wing length to width 100 : 36; fore wing to hind wing 100 : 56; fore femur swollen, dentate, about 2 times as long as wide; tibia nearly 0.80 of femur, tarsus about 0.70 of tibia, tarsal segments 17 : 7 : 6 : 6; middle and hind tibiae slightly compressed.

Type locality : Assam : Lumding

Distribution : Ceylon, India, Pakistan

Host : Agrilus sp.

SPECIES INCERTAE SEDIS

Oodera longicollis (Cameron)

1903 *Epistenia longicollis,* Cameron, *J. Straits Branch R. Asiat. Soc.,* 39 : 97.
1925 *Oodera ornata,* Gahan, *Philippine. J. Sci.,* 27 : 97.
1961 *Oodera longicollis,* Hedqvist, *Ent. Tidskr.,* 82 : 97.

This species is unknown to me; the orginal description is not also traced in the literature available to me.

Type locality : Borneo
Distribution : Burma : Pyinmana
Host : Unidentified insect in wood of *Tectona grandis*

Lycisca Spinola

1840 *Lycisca,* Spinola, *Mag. Zool.,* (2) 2 : 14-18.
1904 *Lycisca,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 288.
1909 *Lycisca,* Schmiedeknecht, *Gen. Ins.,* 97 : 158.
1958 *Lycisca,* Hedqvist, *Ent. Tidsk.,* 79 (1/4) : 176-192.
1961 *Lycisca,* Hedqvist, *Ent. Tidsk.,* 82 (1-2) : 100.

Head semi-globose; eye large, hairy; antennae with 11 segments : 1.1.1.7.1; inserted immediately below the lower orbital border; mandibles tridentate; clypeus sinuate in front; malar space about 0.50 of eye; gena and temple swollen; pronotum longer than or as long as wide; parapsidal furrows complete; scutellum flat; propodeum not steeply declivous, with median carina; abdomen elongate, contracted after the first tergite, smooth; legs stout; fore femora greatly swollen and dentate distoventrally; fore tibia depressed; hind tibial spurs 2; vein *pm* longer than *m, st* short.

In the recent revision of the genus by Hedqvist about 8 species are included under this genus. Other genera closely related to *Lycisca* include *Neolycisca* Hedq., *Romanisca* Hedq., *Urolycisca* Rom., *Amazonisca* Hedq., *Epistenia* Westw. and *Neoepistenia* Hedq. Keys to these genera and to the species of *Lycisca* are given by Headqvist. The group is represented most in South America. The genus *Heydeniopsis* Hedq. is reported from the Baltic Amber.

Type-species : *Lycisca raptoria* Spinola

Thaumasura Westwood

1868 *Thaumasura,* Westwood, *Trans. ent. Soc. London,* 36.
1874 *Belonea,* Westwood, *Thesa. ent. Oxon.,* 146.
1904 *Thaumasura,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 283.
1909 *Thaumasura,* Schmiedeknecht, *Gen. Ins.,* 97 : 163.
1911 *Aressidea,* Cameron, *Proc. Linn. Soc. NS Wales,* 36 : 350.
1915 *Agamerionella,* Girault, *Mem. Queensland Mus.,* 4 : 219.
1961 *Thaumasura,* Hedqvist, *Ent. Tidsk.,* 82 (1-2) : 105.

Abdomen conic-ovate or conical, terminal segment tubularly produced, especially the last 2 abdominal segments tubularly elongate; wings present; eyes bare; pronotum not much narrowed, wider than long.

About 25 species are known from the world.

Type-species : Thaumasura terebrator Westwood

Thaumasura indica Mani & Kaul

(Fig. 131)

1973 *Thaumasura indica,* Mani & Kaul, *Mem. School Ent.,* 2 : 57.
1978 *Thaumasura indica,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 459.

Male : Length 5.00 mm. Body black, with metallic-green and blue reflections; legs predominently brown; apical 0.50 of fore femora, fore tibia at base brownish-black; apical 0.50 of middle femora and basal 0.50 of tibia brownish-black; hind femora apically and hind tibia basally slightly brownish-black; scape, pedicel and annellus dark brown, rest of antenna black.

Head viewed in front width to height about 100 : 85; face coarsely, closely, reticulately punctate; eyes a little more than 2 times as long as wide; interorbital space at level of antennal sockets about 0.60 of head width; head viewed from above about 2 times as wide as long, ocellocular space a little less than ocellar diameter; interocellar space about 2 times ocellar diameter; front ocellar space nearly equal to ocellar diameter; occiput very obscurely transversely striolate; head viewed from side height to thickness 100 : 70; gena about 0.20 of the eye; antennae inserted almost at level of lower orbital borders, long, slender, segments 13 : 1.1.8.3; scape slender; pedicel about 0.25 of scape and about 2 times as long as thick; annellus well developed, about 0.60 of pedicel and about 1.50 times as long as thick; first funicular segment longest, a little more than 0.50 of scape; second funicular segment nearly 0.75 of the first; third segment subequal to second; fourth segment a little shorter than third and practically about 0.50 of first; fifth and sixth segments subequal, each a little shorter than the fourth; seventh segment shorter than sixth; club with 3 segments and equal to preceding 2 segments combined.

Pronotum, scutum and scutellum ratio 30 : 55 : 30; pronotum subquadrate, with transverse striolation, nearly 2 times as wide as long; scutum a little less than 2 times as wide as long, finely, closely and reticulately punctate in front and coarsely and more deeply reticulately punctate behind; scutellum a little wider than long, finely longitudinally rugulose and with a few scattered shallow punctae; fore wing about 3 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 234 : 100 : 93 : 30; hind wing about 0.66 of the fore wing and about

3 times as long as wide; submarginal cell about 6 times as long as wide; fore femur about 3 times as long as thick, tibia a little shorter than femur, metatarsus about 0.33 of tibia, second and third tarsal segments subequal and each about 0.50 of metatarsus, fourth segment a little shorter than third, fifth segment about 1.80 times the fourth; middle femur about 1.30 times fore femur, but more slender; tibia a little longer than femur; metatarsus about 0.33 of tibia, tibial spur a little shorter than 0.50 of the metatarsus; second tarsal segment a little shorter than 0.50 of metatarsus; third segment about 0.50 of the second; fourth segment a little longer than third; fifth segment about 1.70 times the fourth; hind femur a little shorter than middle femur, tibia equal to the middle tibia; metatarsus about 0.33 of tibia; tibial spur about 0.50 of metatarsus; third segment about 0.50 of the second; fourth segment a little longer than the third; fifth segment about 1.30 times the fourth.

Abdomen distinctly longer than 0.50 of body; depressed; tergites with distinct shagreened microsculpture.

Female : Length 7.50 mm. Body black, with green, blue and violet metallic reflections; abdomen smooth and shiny; legs predominently brown, except the coxae which are concolorous with the body; wings subhyaline; veins brown.

Head viewed in front width to length 100 : 80; maximum interorbital space about 0.60 of maximum head width; face coarsely umbilicately punctate; head viewed from above nearly 2 times as wide as long; ocellocular, interocellar and front ocellar spaces equal to ocellar diameter; head viewed from the side height to thickness 100 : 58; gena about 0.40 of the eye, genal carina distinct; antennae inserted almost on level of lower orbital borders; scape uniformly cylindrical, slender, nearly 6 times as long as thick; pedicel about 0.30 of scape; annellus about 0.50 of pedicel.

Pronotum subquadrate, nearly as wide as long; sculpture as in the male; scutum coarsely and moderately punctate, width to length 100 : 60; scutellum finely rugulose, as long as wide, about 0.83 of the scutum; fore wing length to width 100 : 38; veins *sm* : *m* : *pm* : *st* ratio 124 : 100 : 70 : 24; hind wing a little more than 3 times as long as wide, submarginal cell about 0.50 of the wing and about 6 times as long as wide; fore femora distinctly compressed, tibia subequal to femur, but cylindrical; tarsi distinctly longer than tibia; metatarsus about 0.40 of tibia; second tarsal segment about 0.50 of the second segment; middle femur long and slender; tibia distinctly longer than femur; tarsus about 0.60 of tibia, tibial spur about 0.50 of metatarsus; metatarsus about 0.20 of tibia; second tarsal segment about 0.50 of metatarsus; third segment a little shorter than the second; fourth shortest, a little shorter than third; fifth segment about 2.50 times the fourth; hind femur long, a little flattened, about 5 times as long as thick; tibia long, 1.20 times the femur; tarsus about 0.75 of tibia; metatarsus about 0.25 of tibia,

tibial spur about 0.33 of metatarsus; second tarsal segment about 0.60 of metatarsus; third tarsal segment subequal to the second; segments 4-5 subequal, each about 0.66 of the third; abdomen distinctly more than 0.50 of body; slightly depressed, the last terminal segments produced into an elongate tubular structure, with the ovipositor slightly exserted.

Type locality : Dehra Dun

Distribution : Naga Hills, Madhya Pradesh, Uttar Pradesh

Notanisus Walker

1837 *Notanisus,* Walker, *Ent. Mag.,* 4 : 352.
1904 *Notanisus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 284.
1909 *Notanisus,* Schmiedeknecht, *Gen. Ins.,* 97 : 155, 164.
1952 *Notanisus,* Nikolskaya, *Chalcid Fauna USSR,* 210.
1957 *Notanisus,* Kerrich, *Eos,* 33 : 270.
1958 *Notanisus,* Boucek, *Sb. Ent. Odd. Nar. Mus. Praze,* 32 : 363, 369.
1961 *Notanisus,* Boucek, *Sb. Ent. Odd. Nar. Mus. Praze,* 34 : 471.
1964 *Notanisus,* Peck *et al., Mem. Ent. Soc. Canada,* 34 : 30.
1969 *Notanisus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 41.
1978 *Notanisus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 448.

Female with the head viewed above less than 2 times as wide as long; scrobe not deep, shallow, not carinately margined; terminal funicular segment asymmetrically produced below into a process and applied close to the basal part of the club; club apically acuminate or with style-like tip; propodeum with a complete median carina; fore femora not dentate beneath; antennae in male with 5 branches; eyes with obscure, fine pubescence; fore wing bare in basal 0.33; first 3 tergites subequal.

Type-species : Natanisus versicolor Walker

Notanisus versicolor Walker

(Fig. 132)

1837 *Notanisus versicolor,* Walker, *Ent. Mag.,* 4 : 352.
1941 *Notanisus versicolor,* Haliday, *Entomologist,* 1 : 5.
1957 *Notanisus versicolor,* Kerrich, *Eos,* 33 : 270.
1958 *Notanisus versicolor,* Boucek, *Sb. Ent. Odd. Nar. Mus. Praze,* 32 : 369.
1961 *Notanisus versicolor,* Boucek, *Sb. Ent. Odd. Nar. Mus. Praze,* 34 : 471.
1969 *Notanisus versicolor,* Graham, *Brit. Mus. Bull. Ent.,* 16 : 41.
1975 *Notanisus versicolor,* Saraswat & Mukerjee, *Mem. School Ent.,* 4 : 39.
1978 *Notanisus versicolor,* Boucek, Subba Rao & Farooqi, *Orient. Ins., 12 (4) : 448.*

Female : Length 3.00 mm. Body brownish-black; face, clypeal border and gena metallic-green, frons and vertex with violet reflections; eyes brown to black; antennae brownish-yellow except

for the brown second segment of club; thorax concolorous with head; except the brown last tarsal segment of all legs and the metatarsus of the hind leg, rest of the tarsal segments white; fore wing infumate brown; veins brown; abdomen ferruginous-brown.

Head finely reticulate; viewed from front length to width ratio 80 : 100; ocellocular space about 2 times ocellar diameter; front ocellar space about 1.50 times ocellar diameter; interocellar space 4.50 times ocellar diameter; mandibles bidentate; scape 7.50 times as long as thick; pedicel 1.80 times as long as thick; annellus transverse; first funicular segment as long as thick; second funicular segment 1.16 time as long as thick and 1.40 times the first segment; third funicular segment 1.42 times long as thick and about the same times the second segment; fourth funicular segment 1.14 times as long as thick and about 0.80 of the third segment; segments 5-6 subequal to the fourth segment; club about 2.80 times as long as thick; subequal to preceding 3 funicular segments combined.

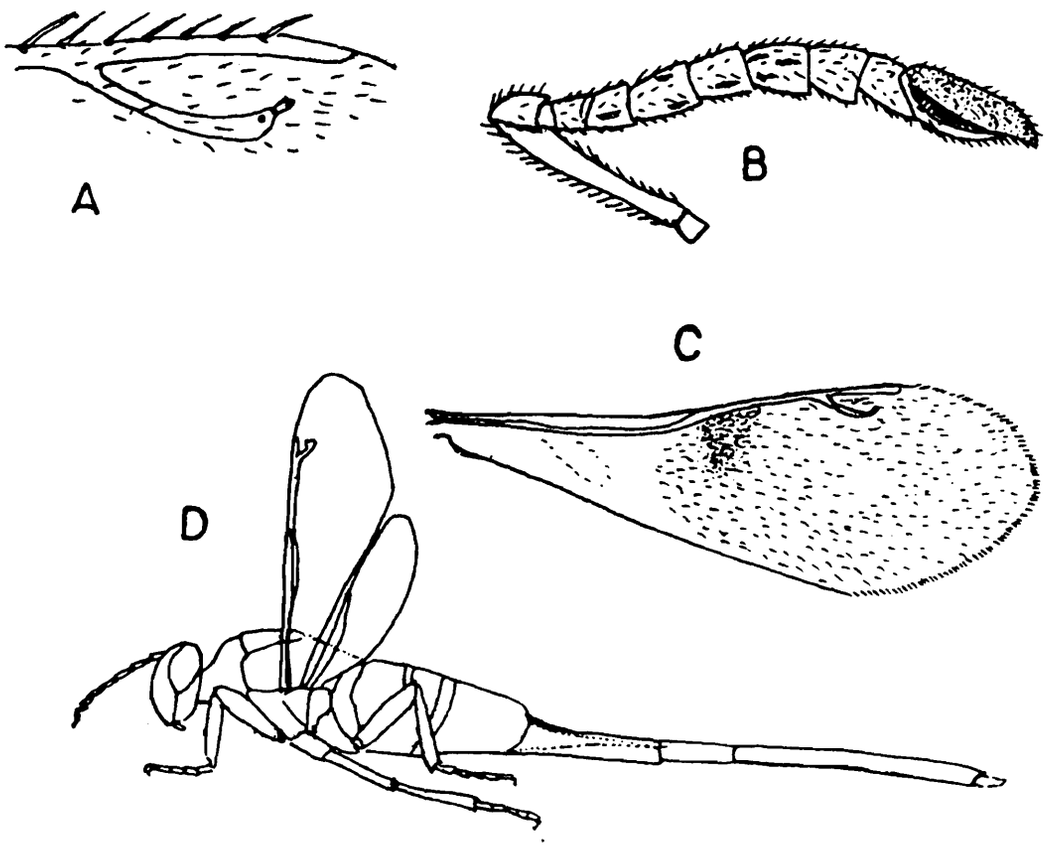

FIG. 132. A-C. *Notanisus versicolor* Walker, female : A. Stigmal area of fore wing; B. Antenna; C. Fore wing; D. *Solenura ania* (Walker), female.

Mesonotum and scutellum coarsely reticulately sculptured; scutellum convex, densely reticulate, except for the median crenulate sulcus, propodeum otherwise smooth, with the median longitudinal carina distinct; fore wing length to width 100 : 35; fore wing with a hyaline band between the fuscous fasciae nearly equally wide; veins *sm* : *m* : *pm* : *st* ratio 153 : 100 : 38 : 30; hind wing length to width

100 : 25; middle leg with the coxa 1.33 times longer than thick; femur 4.28 times longer than thick; tibia 8.00 times longer than thick and subequal to the femur; tibial spur 0.21 of tibia and 0.58 of the metatarsus; tarsus subequal to tibia; metatarsus about 0.37 of tibia and tarsus combined; second tarsal segment 0.58 of metatarsus and subequal to tibial spur; third tarsal segment about 0.71 of second segment; fourth segment about 0.80 of the third; fifth segment about 1.50 times the preceding tarsal segment.

Abdomen finely reticulate; length to thickness in the ratio of 100 : 43 and about 1.70 times the thorax.

Type locality : Europe : Gallia

Distribution : Europe; India : Netarhat (Chhota-Nagpur Plateau)

Solenura Westwood

1868 *Solenura,* Westwood, *Trans. ent.Soc. London,* 36.
1904 *Solenura,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 283.
1909 *Solenura,* Schmiedeknecht, *Gen. Ins.,* 97 : 163.
1926 *Solenura,* Masi, *Konowia,* 5 : 343.

Ovipositor long; last 2 segment of abdomen greatly tubularly elongate; otherwise like *Thaumasura.*

Type-speices : Solenura ania (Walker)

Solenura ania (Walker)

(Fig. 132)

1846 *Epistenia ania,* Walker, *List Chalcis British Mus.,* 1 : 93.
1868 *Solenura telescopica,* Westwood, *Proc. ent. Soc. London,* 36.
1874 *Solenura telescopica,* Westwood, *Thes. Ent. Oxon.,* 143, pl. xxvi, fig. 10, 10 a-b, female.
1909 *Taogoa rufipes,* Cameron, *Entomologist,* 42 : 210.
1918 *Thecasoma longicauda,* Matsumara, *Thousand Insects Japan,* (Sup. 4) : 159.
1926 *Solenura telescopica,* Masi, *Konowia,* 5 (4) : 344. fig. 29.
1961 *Solenura telescopica,* Hedqvist, *Ent. Tidsk.,* 82 (1-2) : 98.
1973 *Solenura telescopica,* Mani & Kaul, *Mem. School Ent.,* 2 : 56.
1978 *Solenura ania,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 456.

Female : Length 17.00 mm. Body dark blue, partly with slightly green, violaceous reflections and sometimes appearing wholly green; abdomen style bluish-fuscous; frons below scrobe and clypeus golden coloured; mandibles and basal segments of palpi black; other palpal segments paler, but apically darker; legs more or less darkened; fore femora bluish-black, hind femora violaceous; wings pale yellow;

Head as wide as thorax, though in some examples slightly wider than thorax; viewed in front trapezoidal, length to width ratio

83 : 100; eyes large, conspicuous, with short and sparse pubescence; scrobes deep, reaching almost to front ocellus above, below with a striaght torulus margin and with an acute minute spine in a triangularly carinate space; clypeus semi-circular but distinct; head viewed from the side ovate, with length to width 100 : 6, vertex rounded; eyes ovate; genal sulcus well developed; ocellar triangle obtuse-angled; ocellocular space subequal to interocellar space; maxillary palpi with 4 segments; segments 1 and 2 subequal, third segment somewhat shorter, fourth segment longest and equal to the other segments combined, falcate and elbowed from the others; antennae stout; pedicel short; annellus as long as thick; funicular segments become thicker towards the antennal tip, and thin basally; first funicular segment not much longer than annellus; sixth segment as long as thick; club indistinct, solid, subequal to the preceding segment and conically cylindrical.

Thorax reticulo-punctate; prothorax small, obliquely impressed above the fore coxae at the sides; pronotum dorsally slightly depressed in the middle in front; parapsidal furrows deep, complete; propodeum short, with median longitudinal carina; fore wing with veins *m* : *pm* : *st* ratio 100 : 57 : 22; discal pubescence short, but dense; hind femora elongate fusiform, subcompressed; hind tibial spurs 2,short; tarsi a little shorter than tibiae, with the segments one and 2 subequal.

Abdomen in front as wide as thorax, with the sides parallel; dorsally convex, posteriorly produced into long, compressed style, almost 5 times as long as the rest of the abdomen, with fine stiff pubescence; first tergite almost rectangular; second tergite a little shorter than the first.

Type locality : Malaya

Distribution : Japan, Formosa, Java and India : Bihar, Dehra Dun, Assam.

Solenura feretrius (Walker)

1846 *Epistenia feretrius,* Walker, *List of Specimens of Hymenopterous Insects,* 1 : 93.
1909 *Solenura feretrius,* Schmiedeknecht, *Gen. Ins.,* 97 : 159.
1961 *Solenura feretrius,* Hedqvist, *Ent. Tidskr.,* 82 : 98.
1978 *Solenura feretrius,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 456.

This species is unknown to me and its description is not also available.

Type locality : Philippines

Distribution : Ceylon, Malaysia

Zolotarewskya Risbec

1919 *Systolomorpha,* Girault, *J. Straits Branch Asiatic Soc.,* 80 : 167.
1956 *Zolotarewskya,* Risbec, *Ann. Soc. Ent. France,* (?)
1961 *Pseudocleonymus,* Hedqvist, *Ent. Tidskr.,* 82 : 91-110.
1976 *Systolomorpha,* Boucek, *J. ent. Soc. S. Africa,* 39 : 10.

Zolotarewskya indica (Mani & Kaul)

(Fig. 133)

1973 *Chalcedectus indicus,* Mani & Kaul, *Mem. School Ent.,* 2 : 50.
1978 *Zolotarewskya indica,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 460.

Male : Length 3.50 mm. Body black; head and thorax black; antennae brownish-black; fore and middle femora and tibiae brownish-black; tarsi brown; hind femora black, with obscure metallic reflections; tibia blackish-brown; tarsus brown; abdomen black.

Head viewed in front width to height 100 : 75; head width to the interorbital space 100 : 74; eye about 2.50 times as long as wide; face closely, minutely reticulately punctate; eyes pubescent; ocellocular space almost 2 times ocellar diameter, interocellar space equal to about 4 ocellar diameters, head viewed from above width to length 100 : 45; front ocellar space nearly 1.50 times ocellar diameter; vertex shiny; head viewed from the side length to width 100 : 56; gena almost 0.50 of eye, genal sulcus distinct; antennae inserted nearly on level of lower orbital border, without a distinct scrobe, segments 11 : 1.1.1.7.1; funicular segments branched; scape about 2.60 times as long as thick, stout; pedicel short, nearly 0.40 of scape; annellus as wide as pedicel; funicular segments 1-6 with long slender branches; segment 7 about 4 times scape and a little shorter than funicle branch; club solid, nearly 0.33 of seventh funicular segment, stout and about 5 times as long as thick.

Pronotum well developed, closely coarsely reticulately punctate, nearly 3 times as wide as long, scutum about 3 times the pronotum and about 1.60 times as wide as long, scutellum about 0.70 of scutum and almost as wide as long, propodeum smooth and shiny, with a dull metallic reflection and a fine median longitudinal carina; fore wing length to width 100 : 35; veins *sm* : *m* : *pm* : *st* ratio 134 : 100 : 22 : 17; hind femur swollen, length to width 100 : 40, femur to coxa ratio 150 : 100, finely shagreened, with 7 well separated acute teeth; tibia a little shorter than femur, tibial spur about 0.50 of metatarsus; tarsus equal to tibia; metatarsus a little less than 0.25 of tibia, second tarsal segment a little shorter than metatarsus, third segment about 0.60 of the second, fourth segment a little shorter than the third, fifth segment about 2.50 times the fourth.

Abdomen depressed, elongate-spatulate, a little less than 0.50 of body; basal constriction nearly as wide as long.

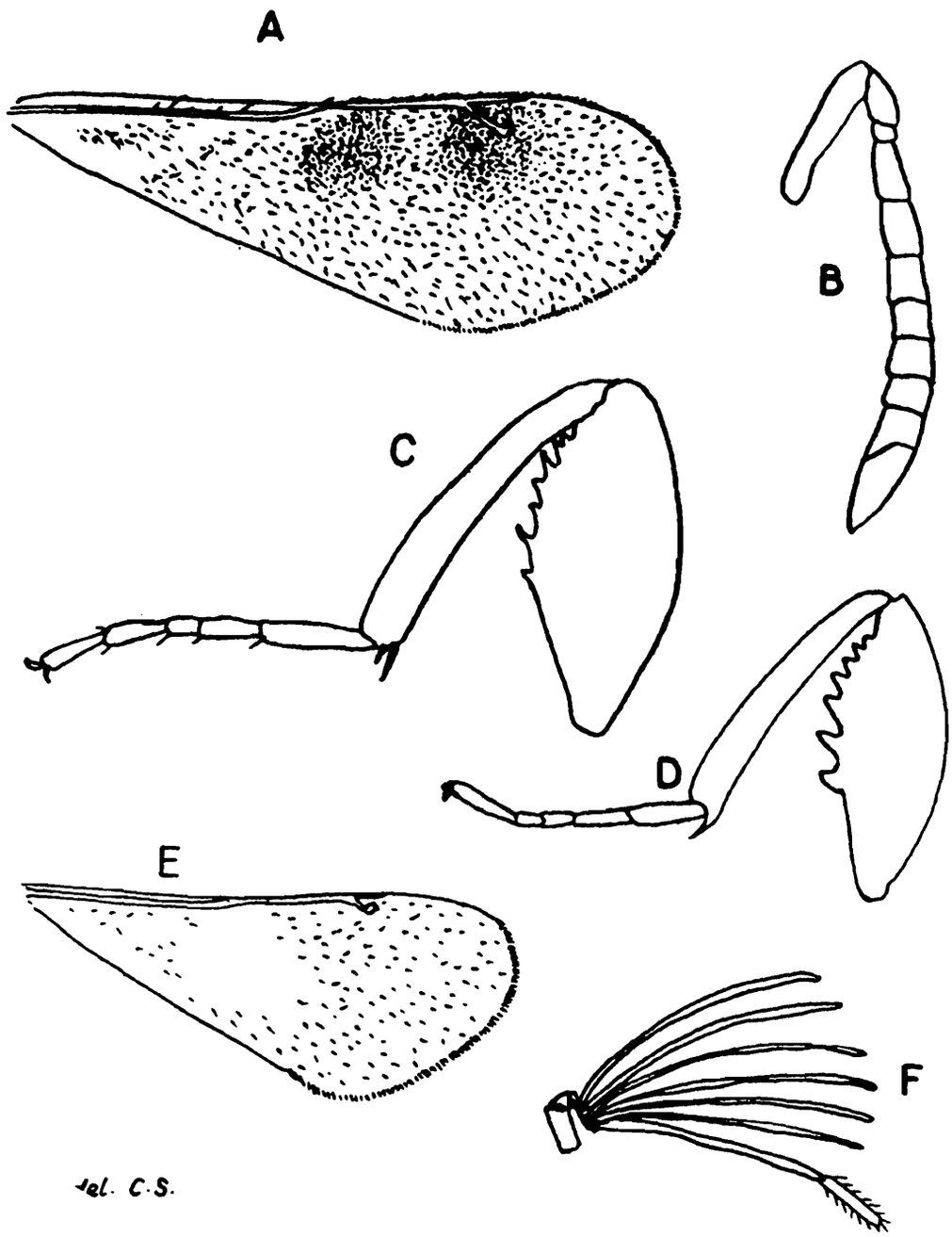

FIG. 133. *Zolotarewskya indica* (Mani & Kaul) : A-C. Female : A. Fore wing; B. Antenna; C. Hind leg; D-F. Male : D. Hind leg; E. Fore wing; F. Antenna.

Female : Length 4.00 mm. Body black; abdomen ferruginous-brown; scape, pedicel, fifth funicular segment and club brownish-black, rest of antennae brown; fore and middle femora and tibiae brownish-black, tarsi brown; hind femora concolorous with thorax, tibia brownish-black, tarsus brown; wings hyaline with 3 faint and obscure brown spots.

Head viewed above width to length 100 : 44; frontovertex sculptured like face, head width to thorax width 100 : 80; head viewed in front width to height 100 : 63, ocellocular space a little

over 2 ocellar diameters; interocellar space about 3 ocellar diameters, front ocellar space distinctly more than ocellar diameter; face closely finely reticulately punctate; eyes pubescent; head viewed from the side height to thickness 100 : 57, gena about 0.40 of the eye, genal sulcus distinct; antennae inserted below lower orbital borders; scape slender, about 5 times as long as thick, slightly thickened apically; pedicel nearly 0.33 of scape; annellus well developed, a little less than 0.50 of pedicel and almost as long as thick; funicular segments 1-2 subequal, third segment distinctly shorter, segments 4-5 subequal and about 0.80 of the third, sixth segment distinctly shorter than the fifth; club equal to the preceding 2.50 segments combined and conically produced apically, first club segment subequal to the sixth funicular segment, but obliquely asymmetrical apically.

Pronotum width to length 100 : 67, closely, finely umbilicately punctate; scutum about 2.50 times the pronotum width to length 100 : 71, punctation as on pronotum, but more distinctly reticulate; scutellum a little wider than long and about 0.70 of scutum; propodeum with a well developed median carina, otherwise smooth and shiny; fore wing length to width 100 : 35, veins *sm* : *m* : *pm* : *st* ratio 186 : 100 : 35 : 30; hind wing length to width 100 : 30; hind femora swollen, 1.50 times coxa and a little over 2 times as long as wide, with 9 teeth, second and fifth teeth longer than the rest, ninth tooth smallest; tibia equal to femur, with 2 spurs, longer tibial spur about 0.33 of metatarsus; tarsus a little shorte than tibia, metatarsus almost 0.33 of tibia; second tarsal segment a little shorter than metatarsus, third tarsal segment about 0.60 of the second, fourth segment a little shorter than the third, fifth segment about 2.50 times the fourth.

Abdomen depressed, elongate-spatulate, a little less than 0.50 of the body; basal constriction nearly as wide as long; ovipositor slightly exserted; first and second tergites shiny; third tergite in the middle, fourth and fifth tergites except narrowly at apex and the terminal tergite with fine reticulate microsculpture.

Type locality : Dehra Dun : Lacchiwala

Distribution : Dehra Dun

Host : Unknown wood border on *Mallotus philippinensis*

SUBFAMILY PELECINELLINAE

1897 *Pelecinellini,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 201.
1904 *Pelecinellinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 285.
1909 *Pelecinellini,* Schmiedeknecht, *Gen. Ins.,* 97 : 150.

Pronotum exceptionally long, longer than mesonotum and scutellum, narrowed in front into a neck, narrower than the rest of thorax; parapsidal furrows distinct; vein *m* long, *pm* even longer;

hind leg greatly elongate; hind metatarsus longer than the other tarsal segments combined; petiole long; abdomen strongly acutely compressed; ovipositor long.

Based on the single genus *Pelecinella* Westwood apparently restricted to South America.

FAMILY MISCOGASTERIDAE

1833 *Miscogasteridae,* Walker, *Ent. month. Mag.,* 1 : 370.
1856 *Miscogasteroidae,* Förster, *Hym. Stud.,* 2 : 19, 24, 51.
1875 *Pteromalina* (partim), Thomson, *Hym. Scand.,* 4 : 12, 216.
1886 *Pteromalinae* (partim), Howard, *Ent. Amer.,* 1 : 198.
1897 *Miscogasteridae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 235, 245.
1897 *Pteromalidae* (partim), Ashmead, *Proc. ent. Soc. Washington,* 4 : 246.
1900 *Miscogasteridae,* Ashmead, *Proc. US nat. Mus.,* 23 : 202.
1904 *Miscogasteridae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 270.
1904 *Pteromalidae* (partim), Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 311.
1909 *Miscogasterinae,* Schmiedeknecht, *Gen. Ins.,* 97 : 269.
1909 *Pteromalinae* (partim), Schmiedeknecht, *Gen. Ins.,* 97 : 303.
1915 *Miscogasteridae,* Girault, *Mem. Queensland Mus.,* 4 : 185.
1934 *Miscogasteridae,* Ferrière, *Mitt. Schweiz. ent. Ges.,* 16 : 85.
1955 *Lamprotatinae,* Delucchi, *Lunds. Univers. Arsskr.* (NF) (2) 50 (20) — *Kungl. Fysiogr. Sallsk. Handl.,* (NF) 65 : (20) : 1-98.
1963 *Sphegigasterinae* (partim), Peck, *Canad. Ent.,* 30 : 606.
1964 *Miscogasterinae,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 36.
1969 *Miscogasterinae,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 95.
1979 *Miscogasterinae,* Krombein *et al.,* Hymen. N. America, 1 : 786.

The family resembles Pteromalidae very closely, but is separated by the hind tibial spurs being double, white in Pteromalidae they are single.

KEY TO SUBFAMILIES

1. Propodeum with a nucha, extending beyond the bases of hind coxae; antennae with 13-14 segments, in male with verticillate hairs on funicular segments; abdomen more or less distinctly petiolate. *Lelapinae*
   Propodeum without nucha; antennae with 8-13 segments. 2
2. Antennae with 13 segments. 3
   Antennae with less than 13 segments. 11
3. Clypeus not dentate in front, or sometimes with only a single tooth or an angular projection. 4
   Clypeus with 2-3 teeth or rounded lobes. 8
4. Fore wing with vein *pm* at least slightly longer than *m*. 5
   Fore wing with vein *pm* not longer than *m* 6

5. Pronotum long or with collar acutely margined; petiole usually short, not conspicuously sculptured. *Trigonoderinae*

   Pronotum not long, shorter than 0.50 of mesoscutum; pronotal collar usually rounded off in front. 6

6. Petiole usually longer than thick, reticulate; pronotal collar distinctly margined. *Sphegigasterinae*

   Petiole short, transverse, smooth or nearly so; pronotal collar not margined. 7

7. Clypeus with a median tooth or tubercle in front *Miscogasterinae*

   Clypeus truncate or slightly curved forwards in front. *Ormocerinae*

8. Clypeus with 3 asymmetrical teeth or curved lobes in front. *Miscogasterinae*

   Clypeus with 2 teeth, or if with 3 teeth, then teeth acute and symmetrical. 9

9. Pronotum long, at least 0.66 of mesoscutum; petiole short, smooth; fore wing with vein *pm* a little longer than *m*. *Trigonoderinae*

   Pronotum short, less than 0.50 of mesoscutum, if longer, then petiole long, sculptured, or vein *pm* not longer than *m* 10

10. First tergite broadly emarginate behind or only slightly sinuate at sides; clypeus bidentate or the left tooth weakly bifid. *Miscogasterinae*

    First tergite broadly emarginate behind. *Sphegigasterinae*

11. Fore wing with vein *pm* 1.70-2.00 times *m*, without speculum but uniformly pilose throughout; mandibles with 2 teeth; eyes conspicuously hairy. *Micradelinae*

    Fore wing with vein *pm* rarely longer than *m*, speculum usually present; mandible with 3-4 teeth; eyes almost glabrous. 12

12. Antennal sockets touching the upper clypeal margin; body generally black, though sometimes slightly metallic; hypopygeal tip near the tip of abdomen. *Pireninae*

    Antennal sockets separated from the clypeal margin by at least their own diameter; body generally metallic; hypopygeal tip remote forward from the tip of abdomen. 13

13. Parapsidal furrows incomplete; clypeus truncate in front. *Termolampinae*

    Parapsidal furrows complete or absent. 14

14. Parapsidal furrows complete; hind coxae not exceptionally large; hind tibiae not compressed and not denticulate. 15

    Parapsidal furrows absent; hind coxae large; hind tibiae compressed, denticulate. *Colotrechninae*

15. Fore wing stigma very large; mandibles simply acutely curved to a point, without tooth; vein *m* not longer than *st*. *Brachyscelidiphaginae*

    Fore wing without exceptionally large stigma; mandibles dentate; vein *m* longer than *st* *Ormocerinae*

SUBFAMILY LELAPINAE

1899 *Lelapinae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 247.
1901 *Lelapinae,* Ashmead, *Faun. Hawaii.,* 1 : 311.
1904 *Lelapinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 271, 279.
1909 *Lelapini,* Schmiedeknecht, *Gen. Ins.,* 97 : 300.
1924 *Lelapinae,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 51 : 149-160.
1927 *Lelapinae,* Mercet, *Eos,* 3 : 49-63.
1938 *Lelapinae,* Mani, *Cat. Indian Ins.,* 23 : 77.

Propodeum produced behind in the middle into a neck-like prolongation between coxae; the short abdominal petiole is attached to this neck; antennae in female weakly clavate, with 13-14 segments; in male usually with verticillate hairs; eyes large; vertex flat; parapsidal furrows complete; axillae approaching by apex but not contiguous.

SUBFAMILY TRIGONODERINAE

1964 *Trigonoderini,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 35.
1968 *Trigonoderini,* Hedqvist, *Ent. Tidskr.,* 89 : (1-2) : 35.
1969 *Trigonoderini,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 98.

This subfamily is derived genus *Trigonoderus* Westwood, which was originally considered as part of the family Cleonymidae. Boucek in 1964 erected the tribe Trigonoderini to contain this genus and this has been followed by Graham in 1969. The Trigonoderinae are very close to Miscogasterinae; pronotum large, usually more than 0.50 of mesoscutum, often with margined collar; petiole not sculptured, usually short; fore wing with vein *pm* slightly longer than *m;* clypeus not toothed, or with only one tooth; antennae with 13 segments.

The genera included are : *Trigonoderus* Westwood, *Plutothrix* Förster, *Gastracanthus* Westwood, *Janssoniella* Kerrich and *Platygerrhus* Thomson.

Medium to large, elongate species with large head; eyes large and sometimes bulging; mandibles 3 + 4 and 4 + 4; antennal segments 13 : 1.1.2.6.3, inserted a little above level of lower orbital borders; clypeus edentate or dentate; malar space short (except in *Eutelisca*); pronotum more or less elongate; parapsidal furrows complete; prepectus large, reticulate (in *Eutelisca* striato-reticulate), sometimes divided posteriorly by a carina; scutellum with frenum; propodeum with a median carina or furrow; sometimes with a more or less complete plica; petiole short; abdomen elongate, acuminate, sometimes with a stylus-shaped apex, tergites with sinuate or straight posterior margin; hind tibial spurs double (in *Eutelisca* one); fore wing with or without speculum, vein *m* and *pm* long, *st* of moderate length, fore wing sometimes with macula.

Presumably species are parasities of Coleoptera in living or dead trees, under bark and in large tree-fungi (*Polyporus*).

Trigonoderus Westwood

1832 *Trigonoderus,* Westwood, *Philos. Mag.,* 127.
1848 *Pterolycus,* Ratzeburg, *Ichn. Forstins.,* 2 : 208.
1904 *Trigonoderus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 284, 285.
1909 *Trigonoderus,* Schmiedeknecht, *Gen. Ins.,* 97 : 166.
1964 *Trigonoderus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 35.
1969 *Trigonoderus,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 99.

Head transverse, vertex broad, gena striate; scrobe long, deep; antennae long, slender, inserted below level of lower orbital borders; annellus transverse; first funicular segment long, clypeus smooth, dentate in front; mandibles 3-4; pronotum sloping into neck, collar narrow, not margined in the middle; parapsidal furrows complete; scutellum with frenum; propodeum smooth, with median longitudinal carina; fore wing with or without speculum; vein *pm* at least 2 times *st;* abdomen almost sessile, elongate-oval, pointed in female; second tergite incised behind; body generally bronze-coloured or metallic blue-green.

Type-species : Trigonoderus princeps Westwood

Trigonoderus malaisei Hedqvist

1968 *Trigonoderus malaisei,* Headqvist, *Ent. Tidskr.,* 89 (1-2) : 46.

Female : Length 6.50 mm. Body golden-green, with tint of purple; abdomen brown, with golden-green and purple reflections; tergites 4-5 laterally with dense white hairs; scape and pedicel yellowish-brown, rest of antenna black; mouthparts, tips of coxae and the rest of legs and tegulae pale yellowish-brown; veins brown; apex of fore wing pale brown.

Head wider than thorax; eyes large; oval; head and thorax equally reticulate; propodeum with long median carina, nearly smooth in the middle; spiracles near anterior margin of propodeum; abdomen elongate, narrow, with tergites 1-2 deeply incised on posterior margin; apex of abdomen stylus-shaped; fore wing with short hairs and very thin; vein *pm* almost reaching apex, *st* short, emitted at about 45°

Male : Similar to female. Length 4.60 mm.

Type locality : Burma

This species is similar to *T princeps* Westwood and *T filatus* Walker, but propodeum is different, the dense hairs on abdomen and the colour are also different.

Glyptosticha Masi

1926 *Glyptosticha,* Masi, *Konowia,* 5 : 348.
1968 *Glyptosticha,* Hedqvist, *Ent. Tidskr.,* 89 (1-2) : 48.

Related to *Trigonoderus.*

Scrobe absent, annellus well developed; pronotum collar in the middle not transversely strigose; abdomen compressed, eyes naked; scutellum frenum distinct; vein *pm* long.

Type-species : Glyptosticha flavipes Masi

Glyptosticha burmanica Hedqvist

1968 *Glyptosticha burmanica,* Hedqvist, *Ent. Tidskr.,* 89 (1-2) : 50.

Female : "Black with tint of blue on thorax, axillae and scutellum are golden green. Scape brown with reddish-brown base, the rest of the antenna black; mandibles, palpi, tegula, legs (coxae only the tips) and basal part of the gaster yellowish-brown, the rest of the gaster dark brown. Fourth and fifth tergites laterally with an area of dense white hairs. Wing veins brown.

Head wider than thorax. Clypeus with anterior margin sinuate. Antenna elongate with many sensillae on funicle joints. Face reticulated, along genal sutur (subocular line) smooth. Thorax with transverse, carinated (costate) furrows between scutellum and axillae, even notauli costate. Mesonotum, axillae and scutellum reticulated, scapulae and pronotum transversely striated. Propodeum with a median costate depression, sulcus spiracularis deep and strongly costate. Spiracles large, oval, near posterior margin of metathorax, callus with a moderately dense hairs. Petiole nearly square, gaster very elongate and narrow. Fore wing with posterior marginal twice as long as marginal vein, stigmal vein 2.50 times shorter than marginal vein, hind wing with costal cell with not complete row of hairs along margin.

Male : Similar to female but gaster not yellowish-brown on the basal part and narrow and compressed laterally.

Length : Female 8.00 mm., Male 4.20 mm."

Type locality : Kambaiti 2100 m (Burma)

SUBFAMILY SPHEGIGASTERINAE

1878 *Sphegigasterides* (partim), Thomson, *Hym. Scand.,* 5 : 16.
1897 *Sphegigasterinae* (partim), Ashmead, *Proc. ent. Soc. Washington,* 4 : 248.
1904 *Sphegigasterini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 330.
1909 *Sphegigasterini* (partim), Schmiedeknecht, *Gen. Ins.,* 97 : 367.
1938 *Sphegigasterinae* (partim), Mani, *Cat. Indian Ins.,* 23 : 104.
1969 *Sphegigasterini,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 123.
1979 *Sphegigasterini,* Krombein *et al.,* Hymen. N. America, 1 : 786.

Most of the genera are distinguished by the slender and long vein *m;* most species parasitise gall midges; abdomen distinctly petiolate; petiole reticulate, longer than thick; pronotal collar usually margined; first tergite generally broadly emarginate behind; clypeus bidentate, rarely with 3 teeth; antennae with 13 segments, including 2 or 3 annelli; vein *pm* only slightly longer than *m.*

KEY TO GENERA

1.	Females	2
	Males.	11
2.	Abdomen with petiole longer than hind coxae	3
	Abdomen with petiole shorter than hind coxae, rarely subequal.	8
3.	Head approximately lenticular, with rounded gena and narrow vertex; collar wide; mesonotum and scutellum flat.	*Syntomopus* Walker
	Head with gena compressed; vertex not narrow.	4
4.	Parapsidal furrows complete and distinct.	5
	Parapsidal furrows incomplete, posteriorly abbreviated or distinct only anteriorly.	6
5.	Scutellum with a cross furrow before the apex; abdomen short, oval, second tergite broadly emarginate apically.	*Sphegigaster* Spinola (= *Merismus* Walk.)
	Scutellum without a cross furrow before the apex; second abdominal tergite very large, with straight posterior margin.	*Acroclisis* Förster
6.	Propodeum punctate, without median carina as lateral folds; abdomen with second and third tergites as in *Perilampus*.	*Sphegigaster* Spinola (= *Trigonogastra* Ashm.)
	Propodeum smooth, with median carina, and usually with the lateral folds also.	7
7.	Abdomen with second and third tergites very large; scutellum with a cross-line before the apex.	*Sphegigaster* Spinola
	Abdomen with second tergite very large, occupying 0.50 or a little more than 0.50 of the dorsal surface; scutellum without or with indistinct cross-line before the apex	*Cryptoprymna* Förster
8.	Parapsidal furrows complete and distinct; second abdominal tergite occupying nearly 0.50 of the dorsal surface.	*Polycystus* Westwood
	Parapsidal furrows much abbreviated or indicated only anteriorly.	9
9.	Propodeum with scattered punctae, and tricarinate; abdomen conic-ovate, second tergite occupying 0.33 of the dorsal surface.	*Bubekia* Dalla Torre
	Propodeum not tricarinate.	10

10. Propodeum rugose; abdomen ovate, tergites 2 and 3 very large, second tergite broadly margined posteriorly. *Crytogaster* Walker

    Propodeum punctate; abdomen triangulate, second tergite emarginate. *Sphegigaster* Spinola (= *Trigonogastra* Ashmead)

11. Abdomen with petiole long, always longer than hind coxae. 12

    Abdomen with petiole not longer than hind coxae. 19

12. Head approximately lenticular, with rounded gena; antennae filiform, pubescent. *Syntomopus* Walker

    Head with compressed gena. 13

13. Parapsidal furrows distinct. 14

    Parapsidal furrows indistinct, indicated only anteriorly 15

14. Abdomen with tergites 2 and 3 large, second tergite 2 times as long as the third, deeply emarginate apically. *Sphegigaster* Spinola (= *Merismus* Walker)

    Abdomen with second tergite large, occupying more than 0.50 of the dorsal surface, not emarginate apically. *Acroclisis* Förster

15. Propodeum punctate, without median carina and lateral folds. 16

    Propodeum smooth, with median carina and lateral folds. 17

16. Abdomen triangular; pronotum anteriorly truncate, with acute margin. *Sphegigaster* Spinola (= *Trigonogastra* Ashm.)

    Abdomen not triangular; pronotum anteriorly without acute margin. *Bubekia* Dalla Torre

17. Palpi and middle tibiae normal; abdominal tergites 2 and 3 large. *Sphegigaster* Spinola

    Palpi and middle tibiae abnormal, latter incrassate apically. 18

18. Abdomen with second tergite large, occupying most of the dorsal surface of the abdomen, apical margin not incised. *Cryptoprymna* Förster

    Abdomen with second tergite not so large; apical margin slightly incised; antennae, except the club, usually yellow. *Polycystus* Westwood

19. Parapsidal furrows distinct; second abdominal tergite slightly emarginate apically. *Polycystus* Westwood

    Parapsidal furrows absent or only indicated anteriorly 20

20. Propodeum rugose; second abdominal tergite broadly emarginate. *Cryptogaster* Walker

    Propodeum punctate. 21

21. Abdomen triangular; pronotum with acute margin anteriorly. *Sphegigaster* Spinola (= *Trigonogastra* Ashm.)

    Abdomen not triangular; head stout, much wider than thorax. *Bubekia* Dalla Torre

Sphegigaster Spinola

1811 *Sphegigaster,* Spinola, *Ann. Mus. Hist. nat. Paris.,* 17 : 149.
1833 *Merismus,* Walker, *Ent. Mag.,* 1 : 371, 375, 377.
1856 *Sphegigaster,* Förster, *Hymen. Stud.,* 2 : 53, 57.
1878 *Sphegigaster,* Thomson, *Hymen. Scandinaviae,* 4 : 17, 20.
1898 *Chrysolampus,* Dalla Torre, *Cat. Hym.,* 5 : 162 (not of Spinola)
1904 *Trigonogastra,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 330, 331.
1904 *Sphegigaster,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 330, 332.
1904 *Merismus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 330, 331.
1909 *Trigonogastra,* Schmiedeknecht, *Gen. Ins.,* 97 : 378.
1909 *Sphegigaster,* Schmiedeknecht, *Gen. Ins.,* 97 : 378.
1938 *Trigonogastra,* Mani, *Cat. Indian Ins.,* 23 : 105.
1952 *Sphegigaster,* Nikolskaya, *Trud. Zool. Inst. Leningrad,* 248.
1958 *Trigonogastra,* Deluchi, *Bull. Zool. Agra. Bachic.,* (2) 1 : 56.
1964 *Sphegigaster,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 40.
1969 *Sphegigaster,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 23 : 124.
1979 *Sphegigaster,* Krombein *et al.,* Hymen. N. America, 1 : 786.

Body slender, strongly punctate; vertex broad; antennae inserted in the middle of face, becoming gradually thicker apically; vein *m* longer than *st, pm* much shorter than *m* and a little shorter than *st;* cheek compressed, parapsidal furrows incomplete, abbreviated posteriorly or only distinct anteriorly; scutellum with a delicate subapical frenum; propodeum densely punctate, without lateral folds and median longitudinal carina; mandibles 4 dentate in male; petiole of the abdomen longer than hind coxae; abdomen tergites 2-3 large, the latter in male about 0.33 of the former

Type-species : Sphegigaster pallicornis (Spinola)

Sphegigaster brunneicornis (Ferrière)

1930 *Trigonogastra brunneicornis,* Ferrière, *Bull. ent. Res.,* 21 : 356-357.
1938 *Trigonogastra brunneicornis,* Mani, *Cat. Indian Ins.,* 23 : 105.
1940 *Trigonogastra brunneicornis,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 20.
1978 *Sphegigaster brunneicornis,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 458.

Female : Length 2.00-2.30 mm. Body dark green, almost black, especially on the head, with some bluish and violaceous shine on thorax; abdomen dark aeneous-green, more or less brownish below, petiole concolorous with thorax; antennae with scape, pedicel and annelli clear yellow, flagellum reddish-brown; mandible yellowish-brown; legs entirely clear yellow, except dark green coxae and last segment of tarsi brown.

Head transverse, broader than thorax, shining but very finely reticulated; vertex broad, ocelli in a low triangle, lateral ocelli as far away from each other as from eye margins; seen from front head rounded, a little broader than long, eye margins parallel; clypeus

emarginate with 2 rather strong teeth in the middle; mandibles each with 4 regular teeth; antennae inserted in the middle of face; scape narrow, elongate, reaching to the anterior ocellus; pedicel short, not much longer than broad; 2 annelli very small; first funicular segment distinctly longer than the pedicel, about 2 times as long as broad; following segments gradually shorter, but all longer than broad, except the sixth which is subquadrate; club not broader than funicle and almost as long as the 2 preceding segments combined.

Thorax evenly reticulated, reticulation smaller and stronger than on the head; pronotum with upper edge acute; mesonotum with incomplete parapsidal furrows; propodeum shorter than the scutellum, with same reticulation and without carinae; wing large, reaching to the tip of abdomen; veins very pale, vein *m* shorter than *sm,* vein *pm* not much shorter than *m,* vein *st* about 0.70 of *m;* legs thin; hind tibiae with one spur.

Abdomen with a long and slender petiole, extending to the end of trochanters; remaining part not longer than thorax, broadest at the base of the third segment, where it is narrower than thorax, then gradually pointed behind; ovipositor slightly potruding.

Type locality : Ceylon : Peradeniya

Host : Pupa of *Agromyza* sp., mining stems of *Hibiscus esculantus*

This species is very similar to *S. rugosa* (Waterston) but differs by the larger size, the darker green colouration of head and thorax, presence of 4 teeth on both mandibles and more elongated funicular segments.

Sphegigaster joachimi (Fernando)

1959 *Trigonogastra joachimi,* Fernando, *Ceylon J. Sci.,* (Biol.) 2 (2) : 249.

Female : Length 1.70 mm. Body black; head metallic-green; scape yellow, rest of antennae pale yellow; scutellum and propodeum bluish-green; abdomen with first 2 tergites metallic blue-green; rest black.

Head wider than high, frons and vertex closely punctate; antennae inserted above the lower orbital border; segments 13 : 1.1.2.6.3; scape equal to pedicel, annelli and first 2 funicular segment combined; funicular segments subequal; segments 4-6 nearly as long as thick; club obtusely pointed; mandibles with 4 teeth; thorax uniformly punctate; parapsidal furrows incomplete; propodeum equal to scutellum; fore wing 2 times as long as wide; basally discal cilia sparse; vein *sm* with 52 hairs; *pm* with 35 hairs; first tergite longest; tergites 2 and 3 widest; petiole long.

Type locality : Thalawakele : Ceylon

Distribution : Ceylon

Host : Agromyza theae Bigot

Sphegigaster peninsularis (Dubey)

1974 *Trigonogastra peninsularis,* Dubey, *Orient. Ins.,* 8 (4) : 413.

1978 *Sphegigaster peninsularis,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 460.

Female : Length 1.80-2.00 mm. Body dark ferruginous-black, eyes dark brown; ocelli pale yellow; antenna pale brown, except the dark brown last funicular segment and club; thorax ferruginous-black; legs brown, except dark ferruginous-brown coxa; petiole concolorous with abdomen; wings hyaline, veins brown.

Head viewed above width of head to thorax 7 : 6, viewed from front length : width 100 : 75; vertex emarginate, occiput moderately excavate; vertex, frons, scrobe and clypeus closely finely reticulate; ocellocular space nearly 3 times ocellar diameter, interocellar space subequal to ocellocular space; gena about 0.64 of the eye; eyes bare; antenna about 1.60 times the height of head, segments 13 : 1.1.2.6.3; scape about 6.60 times as long as thick; pedicel pyriform, distinctly thickened apically, about 0.26 of scape and about 1.20 times as long as thick; annelli transverse, first smaller, second about 1.50 times the first; first funicular segment about 1.17 times the pedicel, second equal to first; segments 3-5 subequal, sixth about 0.83 of fifth and a little narrower than fifth; club equal to the preceding 2 segments combined, first club segment equal to pedicel, second 0.83 of first, terminal segment conical and a little shorter than second.

Pronotum about 10 times as wide as long; parapsidal furrows incomplete; mesonotum about 7 times pronotum, finely reticulate; scutellum almost 0.50 of mesonotum, reticulation as on mesonotum; propodeum smooth, without median carina; fore wing length to width 100 : 52; veins *sm : m : pm : st* ratio 150 : 100 : 50 : 23; *sm* with 6 moderately long bristles; *m* and *pm* with numerous long bristles; *st* with 5 minute cells in a line; marginal fringe short; fore femur moderately stout; tibia slightly thickened above, otherwise slender, tibial spur about 0.80 of metatarsus; metatarsus about 0.30 of tarsus, second segment about 0.70 of metatarsus, third about 0.70 of second, fourth about 0.80 of the third, fifth 1.75 times the fourth; middle coxa as long as wide; femur moderately stout, tibia subequal to femur; middle tibial spur about 1.30 times metatarsus; tarsus about 0.64 of tibia, metatarsus about 0.32 of tarsus, second segment about 0.66 of metatarsus, third about 0.66 of second, fourth subequal to the third, fifth 1.20 times the fourth; hind leg longest, coxa about 1.30 times as long as thick; femur 2.40 times coxa, moderately stout; tibia slender, subequal to femur, tibial spur 0.50 of the metatarsus; tarsus about 0.86 of tibia, metatarsus about 0.30 of tarsus, second segment about 0.60 of metatarsus, third subequal to second, fourth about 0.40 of the third, fifth 3 times the preceding.

Petiole smooth, slender, about 2 times hind coxa, strongly swollen behind base, about 2 times as long as thick and about 0.36

of the rest of abdomen; abdomen excluding petiole about 0.75 of thorax; viewed from above, length to width 100 : 80, first tergite nearly 0.54 of abdomen, second about 0.33 of the second, other tergites transverse; ovipositor a little exserted.

Type locality : Kerala : Ponmudi

Distribution : Kerala

Host : Melanagromyza sp. on an unidentified plant.

This species differs from *Sphegigaster rugosa* (Waterston) chiefly in the body not being black, with metallic sheen; legs brown, tarsi pale brown, general colour of antenna brown except the dark brown last funicular segment and club, pedicel 0.26 of the scape, ratio of funicular segments 15 : 15 : 12 : 12 : 12 : 10; length of antenna 0.80 mm and body 1.80-2.00 mm. It also differs from *Sphegigaster megacephala* (Waterston) chiefly in the unstriate clypeus, first funicular segment not thicker than long, subequal to second, all funicular segments longer than thick, antenna longer than 0.60 mm., no green tinge on the body. These two species were recorded by Waterston from Ceylon.

Sphegigaster stepicola Boucek

1965 *Sphegigaster stepicola,* Boucek, *Acta Faun. ent. Mus. Nat. Pragae,* 11 : 12-14.
1971 *Acroclisis melanagromyzae,* Mani, *J. nat. Hist.,* 5 : 591.
1978 *Sphegigaster stepicola,* Boucek *et al., Orient. Ins.,* 12 (4) : 458.

Female/male : Length 1.50 mm. Body slender, shiny black, with a distinct metallic-sheen, closely finely reticulately sculptured; head black with a dark steel-blue sheen; antennae dark-brown; scape in male dark metallic steel-blue; pedicel darker than scape; thorax shiny black, with dark steel-blue sheen; closely and finely punctate; collar shiny; scutellum and propodeum concolorous with and punctate like mesonotum; metanotum shiny; all coxae black shiny, except the terminal tarsal segments, rest of legs ferruginous brown; hind femora somewhat darker; in male dark brown in basal 0.50 and tibiae and tarsi paler; abdominal petiole shiny black, finely punctate above.

Head transverse, a little wider than thorax; viewed in front width to height 37 : 27; vertex emarginate, occiput moderately excavate, temples narrowly rounded, gena moderately broadly rounded; scrobes moderately excavate; clypeus bidentate anteriorly in the middle; ocellocular space distinctly more than ocellar diameter; antennae long, slender, inserted in the middle of face, with 13 segments: 1.1.2.6.3; scape in female slender projecting somewhat beyond the front ocellus, nearly equal to the first 3 funicular segments combined; pedicel about 0.33 of its length and 1.25 times as long as thick; annelli 2, together nearly equal to 0.50 of the first funicular segment, but the second somewhat longer than the first; first and

second funicular segments subequal and about 0.50 times longer than thick; funicular segments 3-6 subequal but each somewhat shorter and thicker than the second funicular segment, sixth segment nearly as long as thick; club triarticulate, equal to the preceding 2.50 segments combined and a little over 2 times its own thickness, first and second club segments subequal, third club segment conical, about 0.75 of the second and obtusely rounded apically.

Thorax slender, elongate, collar prominent, smooth, as wide as mesonotum, anterior part of pronotum obscurely punctate; parapsidal furrows complete though somewhat faint posteriorly; mesonotum moderately convex; propodeum smooth, without apparent sculpture, without median carina, but with dinstinct lateral sulci; wing about 2 times as long as wide; veins *sm : m : pm : st* ratio 100 : 100 : 100 : 50; stigma large and globose; legs long, slender; hind tibial spur about 0.75 of hind metatarsus, second tarsal segment of hind leg about 0.80 of hind meatarsus, third segment about 0.50 of metatarsus, fourth segment 0.66 of third of fifth segment equal to the third.

Abdomen with petiole slender, over 2 times the hind coxae and nearly 0.75 of the rest of abdomen, slightly widened basally; abdomen elongate-oval in male and elliptic in female, equal to thorax, smooth, shiny black; first tergite occupies nearly 0.50 of dorsum of abdomen; second tergite enclosing the remaining segments; ovipositor somewhat exserted.

Type locality : Europe

Distribution : Europe; India

Host : Phytomyza-complex

Agiommatus Crawford

1911 *Agiommatus,* Crawford, *Proc. US nat. Mus.,* 1 : 278.
1938 *Agiommatus,* Mani, *Cat. Indian Ins.,* 23 : 106.

This genus belongs to the tribe Sphegigasterini; mandibles large with 4 teeth; eyes strongly converging above; antennae inserted in the middle of face, with 13 segments : 1.1.3.5.3; ocellocular space less than ocellar diameter; occiput excavate; vertex narrow; parapsidal furrows incomplete; petiole a little shorter than hind coxae; fore coxae with a distinct spine; propodeum with median and transverse carinae, strongly produced behind into a short neck; spiracle elongate; fore wing with vein *m* long, slightly thickened; *pm* about 0.66 of *m; st* shorter, prepectus with a small triangle above; hind tibial spur single; tergites 1-3 short, fourth larger than others.

Type-species : Agiommatus sumatraensis Crawford

KEY TO SPECIES

1. Abdomen dark brown; legs, including coxae, entirely whitish-yellow; anterior coxae with a distinct spine in front; antennae with first funicular segment a little longer than broad, others more or less quadrate; size 2.25 mm — *A. sumatraensis* Crawford

   Abdomen with 2 yellow stripes; hind coxae more or less green; anterior coxae without spine .. — 2

2. Antennae with first funicular segment 2 times as long as thick, following segments gradually shorter, but all longer than thick; legs whitish, all coxae entirely green; size female 3.00-3.50 mm. — *A. attaci* Ferrière

   Antennae with first funicular segment a little longer than thick, following segments shorter, fourth and fifth quadrate; legs more yellowish, only the base of anterior and posterior coxae green; size female 2.30-2.50 mm. — *A. paria* (Motschulsky)

Agiommatus paria (Motschulsky)

1863 *Eulophus paria,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 63.
1909 *Eulophus paria,* Schmiedeknecht, *Gen. Ins.,* 97 : 416.
1931 *Agiommatus acherontiae,* Ferrière, *Bull. ent. Res.,* 22 : 279.
1938 *Agiommatus acherontiae,* Mani, *Cat. Indian Ins.,* 23 : 106.
1938 *Eulophus paria,* Mani, *Cat. Indian Ins.,* 23 : 115.
1940 *Agiommatus acherontiae,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 20.
1978 *Agiommatus paria,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 435.

Female : Length 2.30-2.50 mm. Head and thorax bluish-green; abdomen aeneous-brown above, with 2 yellowish transverse stripes, one covering the end of the second and the base of the third tergite, second narrower, between the fourth and fifth tergite; ventral side of abdomen almost entirely yellow; antennae yellowish-brown, scape and pedicel paler; mandibles yellow with brown teeth; legs entirely clear yellow, except the greenish base of fore and hind coxae.

Head transverse, broader than thorax, finely reticulate; eyes strongly converging above, face below antennae 2 times as broad as vertex; cheeks broader than 0.50 of eye, very finely reticulate, almost smooth; ocelli rather large, occellocular space less than ocellar diameter; front ocellar space about equal to ocellar diameter; mandibles strong, with 2 teeth; antennae short; scape slender, not reaching to the front ocellus; pedicel a little longer than thick; annelli 3, small, transverse; first funicular segment about 1.50 times as long as thick, second and third only slightly elongate, segments 4 and 5 subquadrate; club equal to the preceding 2 segments combined.

Thorax more strongly and closely reticulate than head; pronotum transverse, short, acutely margined in front; mesonotum more than 2 times as broad as long, parapsidal furrows only

anteriorly weakly impressed; mesopleurae with strongly punctate, elongate impressed area, otherwise smooth; scutellum more finely reticulate posteriorly than anteriorly; axillae very finely striate, almost smooth; propodeum with usual cross formed by the median longitudinal and transverse carinae, 4 areas thus formed finely reticulate; nucha rounded and smooth; wing large, vein *m* much shorter than *sm,* 2.50 times as long as *st; pm* longer than *st;* legs slender

Petiole a little shorter than hind coxae, 2 times as long as thick, abdomen narrower but a little longer than thorax, second tergite about as long as its hind margin, third tergite shorter, hind margin emarginate and angulate in the middle; ovipositor not exserted.

Male : Length 1.40 mm. Similar to female; antennae quite yellow, club brown, funicular segments not longer than thick; abdomen a little shorter than thorax, with a yellow spot in the middle extending to base of the fourth tergite.

Type locality : Ceylon

Distribution : India; Malaya; Ceylon

Host : Eggs of *Acherontia styx* Westwood; eggs of an unknown moth, on wild plantain leaf.

This species is closely related to *A. ataci* Ferrière, from which it differs in its smaller size, the more yellowish colouration of the legs, tegulae and scape, and other characters given in the key to species of *Agiommatus.*

Notoglyptus Masi

1917 *Notoglyptus,* Masi, *Novit. Zool.,* 24 : 181.
1964 *Notoglyptus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 36.
1969 *Notoglyptus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 140.

Head above wide; gena short, excavate below; scutellum with a discal fovea; first tergite very large, concealing the second tergite; clypeus almost truncate in front, without tooth; pronotal collar acutely margined at least in the middle, usually the whole width of pronotum; mandibles with 4 teeth on left and right; ocellar triangle obtuse; vein *pm* about 2 times *st; m* slender, long; petiole longer than hind coxae, minutely reticulate; flagellum with long hairs; scutellur frenum with a transverse series of several fovea; dorsellum transversely sulcate; propodeum carinate, plicate.

Type-species : Notoglyptus virescens Masi

Notoglyptus virescens Masi

1917 *Notoglyptus virescens,* Masi, *Novit. Zool.,* 24 : 181.
1917 *Notoglyptus niger,* Masi, *Novit. Zool.,* 24 : 181.
1972 *Notoglyptus niger,* Farooqi & Menon, *Mushi,* 46 : 28.
1976 *Notoglyptus virescens,* Boucek, *J. ent. Soc. S. Africa,* 39 : 15.
1978 *Notoglyptus virescens,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 448.

Male : Length 1.40 mm. Body dark greenish-aeneous, partly black; generally shiny between punctae; eyes reddish-brown; scape, mandibles, tegulae, veins pale yellowish-brown; flagellum yellowish fuscous; legs yellow.

Head stout, wider than thorax; eyes glabrous, bulging, about 0.60 of height of head; face slightly convex; antennae inserted on level of lower orbital border; viewed above as wide as long; vertex subplane, margined behind; ocellar triangle obtuse; ocellocular space more than interocellar space; scape reaching ocellus; pedicel 2 times as long as thick; annelli 2, club equal to preceding 2.50 segments combined; pronotum 2 times as wide as long; collar in the middle narrow; parapsidal furrows complete; pronotum transversely strigose, reticulate, scapular sulcus with a series of fovea, fore wing equal to body, basally glabrous, apical fringe long veins *m* equal to *pm,* legs long stout; petiole equal to hind coxae; abdomen short; first tergite semi-elliptic.

Type locality : Seychelles Islands

Distribution : Seychelles Islands; Italy, Hungary, Czechoslovakia; India : Aligarh.

*Paracarotomus Ashmead

1894 *Paracarotomus,* Ashmead, *Trans. American ent. Soc.* 21 : 335.
1904 *Paracarotomus,* Ashmead, *Mem. Carnegie Mus.,* 1(4) : 333.
1909 *Paracarotomus,* Schmiedeknecht, *Gen. Ins.,* 97 : 384.
1979 *Paracarotomus,* Krombein *et al., Hymen. N. America,* 1 : 789.

This genus is separated from *Caratomus* Dalman (Pteromalidae) by the absence of lateral horns or rests of head; petiole 2 times hind coxae, abdomen compressed at least in male; head large, coarsely punctate, wider thorax, not narrowed behind; antennae short, inserted in the middle of face, scape not reaching front ocellus; pedicel and 2 annelli large; funicular segments short, gradually becoming thicker apically; club stout; eyes small, hairy; face excavate, radiately striate; mandibles with 4 teeth on right and 3 teeth on left; collar not margined; scutellum convex; parapsidal furrows indicated only anteriorly; propodeum smooth, with faint median carina, round spiracles; wing without speculum; vein *m* about 3 times *st; pm* longer than *m* and *st;* hind tibial spur single; petiole rather long.

Type-species : Paracarotomus cephalotes Ashmead

Paracarotomus cephalotes Ashmead

1894 *Paracarotomus cephalotes,* Ashmead, *Trans. American ent. Soc.,* 21 : 336.
1909 *Paracarotomus cephalotes,* Schmiedeknecht, *Gen. Ins.,* 97 : 384.

* The placement of this genus in the family Miscogasteridae is dubious.

1978 *Paracarotomus cephalotes,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 453.

1979 *Paracarotomus cephalotes,* Krombein *et al.,* Hymen. N. America, 1 : 789.

Type locality : Virginia

Distribution : America, India : Bangalore (Karnataka)

Host : Parasite in Syrphid puparia, especially of *Paragus* spp.

Acroclisoides Girault

1915 *Acroclisoides,* Girault, *Mem. Queensland Mus.,* 3 : 334.

1938 *Acroclisoides,* Mani, *Cat. Indian Ins.,* 23 : 105.

Head much wider than thorax, wider than long, viewed in front; antennae elongate with 2 annelli, vein *m* thickened, petiole very short, abdomen small triangular.

Type-species : Acroclisoides megacephalus Girault

KEY TO SPECIES

1. Fore wings with an obscure dusky spot beneath knob of vein *st;* fourth tergite occupying 0.50 of surface of abdomen.	*A. megacephalus* Girault
Fore wings hyaline, fourth tergite smaller.	2
2. Antennae with last 3 funicular segments yellow, ringed with black apically.	*A. laticeps* Girault
Antennae with all funicular segments equally dark	3
3. Head and thorax aeneous; size 1.60 mm.	*A. lazonensis* Gahan.
Head and thorax dark metallic-green; size 2.00-2.50 mm.	4
4. All coxae concolorous with body; petiole of abdomen yellow; head only a little wider than thorax.	*A. major* Girault
Middle coxae and tip of posterior coxae yellow; petiole of abdomen black; head much wider than thorax. ..	*A. indicus* Ferrière

Acroclisoides indicus Ferrière

(Fig. 134)

1931 *Acroclisoides indicus,* Ferrière, *Bull. ent. Res.,* 22 : 279.

1938 *Acroclisoides indicus,* Mani, *Cat. Indian Ins.,* 23 : 105.

1940 *Acroclisoides indicus,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 20.

1978 *Acroclisoides indicus,* Boucek *et al., Orient. Ins.,* 12 (4) : 435.

Male : Length 2.00-2.30 mm. Head and thorax dark metallic-green; abdomen with bluish reflections; petiole black, second tergite brown or more or less yellow; antennae brown; scape and pedicel yellow; mandibles yellowish with dark teeth; tegulae and legs yellow, only the anterior and posterior coxae (except tip of posterior) green.

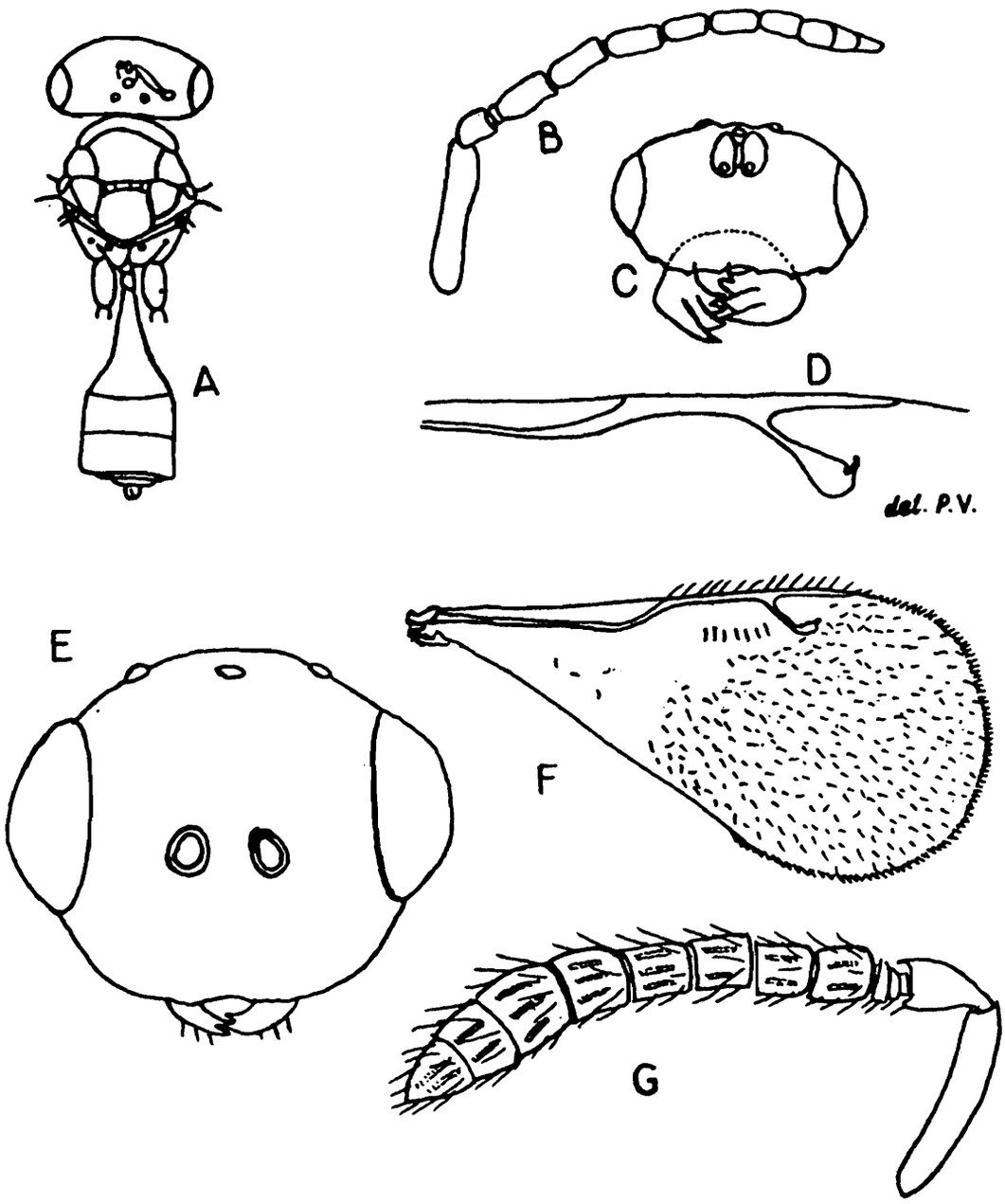

FIG. 134. A-D. *Acroclisoides indicus* Ferrière, male : A. Body (outline); B. Antenna; C. Head in frong view; D. Stigmal area of fore wing; E-G. *Systasis dalbergiae* Mani, female : E. Head; F. Fore wing; G. Antenna.

Head very large, 1.60 times as wide as thorax; ocelli forming a low triangle, interocellar space a little less than ocellocular space; viewed from front head 1.60 times wider than long; eyes small, rounded; cheeks large and strongly converging; malar space concave, with a strong carina to base of mandibles; clypeus not separated from the face, distinguished only by its finer reticulation, with 3 emarginations in front; mandibles very large and strong, with 4 teeth; head strongly and closely reticulate; antennae inserted above the middle of face; scape reaching beyond front ocellus; pedicel short, rounded; annelli 2 very small; funicular segments elongate, first segment about

2.50 times pedicel, following segments gradually shorter, but sixth segment 2 times as long as thick; club with 3 segments, shorter than the preceding 2 segments combined.

Thorax closely reticulate like head; axillae with much finer reticulation, almost smooth; pronotum very small, transverse; mesonotum 2 times as wide as long; parapsidal furrows complete; scutellum rounded, convex, with a transverse groove at curved base, punctate; propodeum reticulate in the middle with a distinct median carina, a rounded groove on each side; sides almost smooth, with lateral grooves below the small rounded spiracles; nucha rounded and small, smooth; wing large and broad; vein *m* not very long and somewhat thickened; veins *st* and *m* equal; vein *pm* thin, a little longer than *m*; legs elongate, femora and tibiae rather thin; hind tibiae with 2 spurs.

Abdomen depressed, narrower but a little longer than thorax, more or less triangular in outline, truncate posteriorly; tergites smooth; petiole very short, much shorter than hind coxae, almost as thick as long; second tergite triangular, elongate, subequal to tergites 3 and 4 combined, sometimes somewhat narrower and petiole-like; tergites 3-5 about equal 2 times as broad as long; following tergites very short, partly hidden by fifth tergite.

Type locality : India : Dehra Dun, U.P :

Distribution : India, Burma

Host : Eggs of a pentatomid bug on leaf of *Tectona grandis*

Cryptoprymna Forster

1833 *Prosodes,* Walker, *Mongr. Chalc. Ent. Mag.,* 1 : 371.

1856 *Chryptoprymna,* Förster, *Hym. Stud.,* 2 : 52,56. (New name for *Prosodes* Walker nec Eschscholz)

1878 *Chrytoprymnus,* (Sic), Thomson, *Stym. Scand.,* 4 : 17, 22. (invalid emend.)

1904 *Chryptoprymna,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 330, 332.

1909 *Chryptoprymna,* Schmiedeknecht, *Gen. Ins.,* 97 : 375, 376, 380.

1952 *Chryptoprymna,* Nikolskaya, *Chalcid Fauna USSR,* 248.

1961 *Chryptoprymna,* Boucek, *Sb. Ent. Odd. Nar. Mus., Praze,* 34 : 71.

1964 *Chryptoprymna,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 40.

Head nearly as wide as thorax; vertex broad, antennae inserted in the middle of face, short, stout, with an obliquely truncate stout club; genal furrow present; clypeal margin produced and shallowly emarginate in the middle; collar narrow, actuely margined; mesonotum flat, parapsidal furrows indicated only anteriorly; scutellum without fovea; propodeum long, finely or coarsely punctate, with median longitudinal carinae and lateral folds; vein *st* shorter than *pm;* petiole longer than hind coxae, flat, reticulate punctate; first tergite very large, with a deep groove in front concealing other tergites; in male funicular segments cylindrical.

Type-species : Cryptoprymna atra (Walker)

Cryptoprymna brama (Motschulsky)

1863 *Eulophus brama,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 64.
1909 *Eulophus brama,* Schmiedeknecht, *Gen. Ins.,* 97 : 414.
1938 *Eulophus brama,* Mani, *Cat. Indian Ins.,* 23 : 114.
1978 *Cryptoprymna brama,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 441.

Female : Length 1.25 mm. "Subelongatus, convexus, nitidus, niger, pedibus antennisque pallido-testaceis, his apice infuscato; capite lato, depresso, vertice impresso, ocellis verticalis, cinutis, oculis oblongis, convexis, prominulis, nigro-castaneis, antennis thoracis fere longitudine, articulis 4-8 cylindricis, subtransverses, 9-o majore, elongato-conico; thorace capite paulo angustiore, elongato-attenuato, subgibboso, subtiliter dense punctulato, subopaco, nigro-subaeno, pronoto subtransverso, antice transversim nitido-marginato, postice lato truncato, segmentis minutis, transversis, nitidis, mesonoto subovato, subconvexo, mentanoto valde exserto, postice antenuato, ruguloso punctato, medio longitudinaliter subcarinulato; petiolo brevissimo sed distincto, abdomine subovato, nitidissimo."

Male : "Elongatus, linearis, convexiusculus, nitidus, niger, antennarum basi pedibusque rufo-testaceis; abdomine elongato-conico; femoribus posticis antennarumque articulis 6 ultimis nigris."

Type locality : Mt. Nuwara Elliya and Mt. Patnnas (Ceylon)

Distribution : Ceylon, Malaysia

Host : Probably a parasite of some Diptera

Nigricolana Boucek

1976 *Nigricolana,* Boucek, *J. ent. Soc. S. Africa,* 39 : 9-31.

Head and thorax reticulate, occiput margined, eyes finely pubescent; scrobe moderately shallow; clypeus shallowly emarginate; gena not depressed; mandible with 4 teeth; antennae with 13 segments : 1.1.2.6.3; pronotal collar broad, short; parapsidal furrows complete; scutellar frenum absent; propodeum coarsely reticulate, without median carina; nucha short; second hind tibial spur very short; fore wing with vein *m* longer than *st; pm* longer than *st;* speculum not touching *m;* petiole long, reticulate, in female with a fine median carina and with sublateral grooves and in male longer without carina and grooves; first tergite subtriangular; basal fovea short; hind margin produced in the middle; second tergite quadrate, transverse but longer than the following.

Type-species : Nigricolana nigricola (Ferrière)

This genus is recognised by short antennae and differs from *Sphegigaster* in the antenna not inserted in the middle of face; gena not impressed and clypeus without teeth.

Nigricolana megacephala (Waterston)

1914 *Trigonogastra megacephala,* Waterston, *Bull. ent. Res.,* 5 : 328.
1938 *Trigonogastra megacephala,* Mani, *Cat. Indian Ins.,* 23 : 105.
1959 *Trigonogastra joachimi,* Ferrando, *Ceylon J. Sci.* (Biol.) 2 : 249-259.
1978 *Nigricolana megacephala,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 447.

Male : Length 0.15 mm. Body generally black, with some greenish tinge; scape flavescent.

Head large, closely reticulate-punctate; antennal segments not longer than thick; scape about 4.50 times as long as thick, slightly expanded before tip; pedicel about 0.33 of scape, a little longer than thick; first funicular segment as long as thick; second segment longer than thick; segments 3-6 as long as thick; club slightly thickened; segments ratio 10 : 9 : 8; thorax depressed; propodeum reticulate; fore wing not quite 2 times as long as wide; veins *sm* : *m* : *pm* ratio 4 : 2 : 1; hind wing 4 times as long as wide; abdomen not completely triangular, shiny; second tergite about 0.33 of dorsum.

Female : Length 1.60 mm. Body generally black as in male; head reticulate; clypeus striate; scape 6 times as long as thick, not swollen preapically, pedicel a little more than 0.33 of scape; first funicular segment slightly thicker than long, shorter than the second; funicular segments 2-5 subequal, as long as thick; sixth a little shorter; club distinctly swollen, with the segments subequal.

Type locality : Ceylon

Host : Tea leaf-miner *Tropicomyia* (also as *'Agromyza' 'Oscinis') theae* (Cites)

SUBFAMILY MISCOGASTERINAE

1833 *Miscogasteridae* (partim), Walker, *Ent. Mag.,* 1 : 370.
1835 *Ormoceridae* (partim), Walker, *Ent. Mag.,* 1 : 167.
1835 *Pteromalidae* (partim), Walker, *Ent. Mag.,* 2 : 286.
1856 *Miscogasteroidae* (partim), Förster, *Hym. Stud.,* 2 : 19, 24, 59.
1875 *Pteromalina* (partim), Thomson, *Hym. Scand.,* 4 : 12, 216.
1885 *Pteromalinae* (partim), Howard, *Ent. Amer.,* 1 : 198.
1885 *Miscogastrides,* Thomson, *Hym. Scand.,* 4 : 16, 219.
1886 *Miscogastrides,* Howard, *Ent. Amer.,* 2 : 33.
1904 *Miscogasterinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 276.
1909 *Miscogasterini,* Schmiedeknecht, *Gen. Ins.,* 97 : 289.
1969 *Miscogasterini,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 149.
1979 *Miscogasterini,* Krombein *et al.,* Hymen. N. America, 1 : 787.

Abdomen petiolate; if however the petiole is indistinct, then abdomen elongate, acutely keeled beneath; separated from Sphegigasterinae by the double apical tibial spur; head as wide as thorax; pronotal collar not margined; eyes large, glabrous; frons flat,

antennae in the middle or low on face, with triarticulate club; clypeal margin bidentate in the middle; sometimes also with 3 asymmetric teeth or even curved lobes or also with a median lobe or tubercle; parapsidal furrows rarely only indicated anteriorly; vein *m* thin, ovipositor hidden or exserted; first tergite not broadly emarginate, sometimes slightly sinuate.

KEY TO TRIBES

1. Parapsidal furrows complete; scapula mostly convex; scutellum with frenum; clypeus rarely transverse, teeth remote; vein *pm* much longer than *st* — *Miscogasterini*

Parapsidal furrows incomplete; scutellum with or without frenum; clypeus transverse, teeth approximate — *Halticopterini*

Tribe MISCOGASTERINI

1878 *Miscogasterides,* Thomson, *Hymen. Skand.,* 5 : 220.
1904 *Miscogasterini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 278.
1909 *Miscogasterina,* Schmiedeknecht, *Gen. Ins.,* 97 : 290.

Parapsidal furrows complete; scutellum with frenum; clypeal teeth remote.

Tribe HALTICOPTERINI

1875 *Miscogasterides,* Thomson, *Hymen. Skand.,* 4 : 221.
1904 *Halticopterini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 227.
1904 *Miscogasterinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 277.
1909 *Halticopterina,* Schmiedeknecht, *Gen. Ins.,* 97 : 298.

Parasidal furrows incomplete; scutellum with or without frenum; clypeal teeth remote.

Halticoptera Spinola

1811 *Halticoptera,* Spinola, *Ann. Paris Mus. d'Hist. Nat.,* 17 : 148.
1832 *Pachylarthrus,* Westwood, *Edinb. & Dublin, Phil. Mag. & Jour. Sci. London,* (3) 1 : 127.
1832 *Phagonia,* Curits, *Brit. Ent.,* 9 : 427.
1833 *Dicyclus,* Walker, *Ent. Mag.,* 1 : 371, 455.
1834 *Phacostomus,* Nees, *Hym. Ichn. Aff. Monogr.,* 2 : 121.
1846 *Megorismus,* Walker, *Chalcid List Hym. Brit. Mus.,* 1 : 29.
1848 *Tityros,* Walker, *Chalcid List Hym. Brit. Mus.,* 2 : 108.
1856 *Pachylarthrus,* Förster, *Chalcid & Proctotrupii,* 2 : 52, 53, 55.
1856 *Tityros,* Förster, *Chalcid & Proctotrupii,* 2 : 53, 58.
1876 *Halticoptera,* Thomson, *Pteromalus (Svederus)* 4 : 221, 245.
1904 *Halticoptera,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 277.
1904 *Megarismus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 278.
1904 *Dicyclus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 277.

1906 *Megalorismus,* Schulz, *Spolia Hym.*, 147.
1909 *Halticoptera,* Schmiedeknecht, *Gen. Ins.*, 97 : 298-299.
1952 *Halticoptera,* Nikolskaya, *Chalcid Fauna USSR,* 249.
1969 *Halticoptera,* Graham, *Bull. Brit. Mus. Ent.* (Suppl.), 16 : 155-159.
1979 *Halticoptera,* Krombein *et al.*, Hymen. N. America, 1 : 788.

Head with occiput margined; antennae inserted below lower orbital border; scape long, slender; pedicel longer than first funicular segment; funicular segments transverse; mandibles stout with 4 teeth; thorax stout; pronotum not margined; mesonotum squamously punctate; parapsidal furrows incomplete, disappearing behind; scutellum with indistinct or no frenum; propodeum mostly with median longitudinal keel; vein *m* 2-3 times longer than *st;* vein *pm* at least slightly shorter than *m;* petiole hardly longer than thick, punctate above, first abdominal tergite large; in male 2 terminal maxillary palp segments stout; body bright metallic-green or bluish-green; in male maxillary palpi modified, with the terminal 2 segments fused together into yellow sac.

Type-species : Halticoptera flavicornis (Spinola)

Halticoptera propinqua (Waterston)

1914 *Polycystus propinquus,* Waterston, *Bull. ent. Res.*, 5 : 325.
1938 *Polycystus propinquus,* Mani, *Cat. Indian Ins.*, 23 : 106.
1940 *Polycystus propinquus,* Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 20.
1978 *Halticoptera propinqua,* Boucek, Subba Rao & Farooqi, *Orient. Ins.*, 12 (4) : 443.

Male : Length 1.50 mm. Body dark metallic-green, with coppery or bronzy reflections; club dark brown; abdomen purplish-black.

Head wider than long, moderately coarsely punctate; clypeal margin straight, incised in the middle, with a minute tooth on either side of incison; antennae inserted level of lower orbital border; scape long, slender, reaching beyond front ocellus; pedicel longer than 2 annelli and the first funicular segment combined; first funicular segment shortest, about 0.75 of the second; other funicular segments gradually becoming thicker apically.

Thorax strongly, coarsely reticulate-punctate; parapsidal furrows complete, though delicate behind; propodeum with a median carina and indistinct lateral folds; petiole reticulate, with median and lateral carinae obscure.

Abdomen triangularly expanded; tergites smooth, shiny; second tergite largest; mesopleural impressions competely and coarsely reticulate.

Type locality : Ceylon

Distribution : Ceylon : India : Delhi, Hyderabad

Host : Agromyza phaseoli Coq. on *Phaseolus vulgaris*

SUBFAMILY MICRADELINAE

1957 *Micradelinae,* Kerrich & Graham, *Trans. Soc. Brit. Ent.,* 12 : 271.
1969 *Micradelini,* Graham, *Bull. Brit. Mus.,* (Ent.) Suppl., 16 : 96, 247.

This subfamily contains a single genus *Micradelus* Walker, placed by Ashmead and Schmiedeknecht under the Cleonymidae, but recently transferred by Graham to the Miscogasteridae.

Fore wings uniformly wholly pilose, without a speculum; vein *pm* about 1.70-2.00 times *m*; mandible with 2 teeth; leaving an opening in front of clypeus when closed together; head and thorax densely clothed with short black hairs; eyes conspicuously hairy; body non-metallic coloured, black; antennal segments 10-12, with one annellus or 2-3 annelliform basal funicular segments.

SUBFAMILY PIRENINAE

1843 *Pereniani* (partim), Haliday, *Trans. ent. Soc. London,* 3 : 295.
1856 *Pyrenoidae* (partim), Förster, *Hym. Stud.,* 2 : 18, 22, 40.
1875 *Pirenina,* Thomson, *Hym. Scand.,* 4 : 12, 187.
1886 *Pireninae* (partim), Howard, *Ent. Amer.,* 1 : 198.
1899 *Pireninae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 247.
1904 *Pireninae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 271.
1909 *Pirenini,* Schmiedeknecht, *Gen. Ins.,* 97 : 270.
1979 *Pirenini,* Krombein *et al., Hymen. N. America,* 1 : 793.

Body mostly metallic coloured, small-sized; antennae inserted close to the mouth border, with 8-11, usually 10 segments; head ovate lenticular, vertex narrow; gena short; eyes almost naked; parapsidal furrows distinct; propodeum smooth; fore wing hyaline, broadly rounded apically, fringe long; veins *pm* and *st* generally short; hind coxae long; abdomen sessile, often compressed, especially in male; ovipositor often exserted; hypopygial tip at tip of abdomen; antennal sockets contiguous with clypeus.

KEY TO GENERA

1.	Females	2
	Males.	8
2.	Eyes pubescent; antennae with 10 or 11 segments	3
	Eyes glabrous; antennae with 10 segments	4
3.	Antennae with 11 segments; scape long and slender; pedicel at least as long as the club; vein *m* not more than 4 times *st*.	*Erotolepsia* Howard
	Antennae with 10 segments; scape short and slender; pedicel shorter than club; vein *m* 6 times as long as vein *st*	*Herbertia* Howard

4.	Legs with abnormal shape; tibiae strongly inflated or swollen, stouter than femora; tarsi short and slender; maxillary palpi with 2 segments	*Spathopus* Ashmead
	Legs normal; maxillary palpi with 4 segments	5
5.	Ovipositor not exserted; veins *st* and *pm* very short	6
	Ovipositor exserted	7
6.	Eyes widely separated	*Euryophrys* Förster
	Eyes close together; mud coloured	*Pirene (Macroglenes* Westwood)
7.	Veins *pm* and *st* very short; antennae with 2 annelli; femora clavate; mud or bluish	*Pirene* Haliday
	Veins *pm* and *st* long; antennae with one annellus; mud coloured	*Ecrizotes* Förster
8.	Eyes pubescent	9
	Eyes glabrous	10
9.	Vein *m* not more than 4 times longer than *st; st* with a distinct knob; antennae with 11 segments	*Erotolepsia* Howard
	Vein *m* 6 times as long as *st;* antennae with 10 segments	*Herbertia* Howard
10.	Maxillary palpi with 4 segments; veins *st* and *pm* short.	11
	Maxillary palpi with 2 segments.	12
11.	Eyes not converging above.	*Euryophrys* Förster
	Eyes converging above and nearly meeting above on the vertex.	*Pirene* Haliday (*Macroglenes* Westwood)
12.	Vein *m* not 2 times as long as *st;* flagellum not clavate.	*Pirene* Haliday
	Vein *m* about 2 times as long as *st,* clavate at base; flagellum short, clavate apically; funicle moniliform.	*Ecrizotes* Förster

Herbertia Howard

1894 *Herbertia,* Howard, *J. Linn. Soc. London,* 25 : 98.
1904 *Herbertia,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 272.
1909 *Herbertia,* Schmiedeknecht, *Gen. Ins.,* 97 : 271.
1934 *Herbertia,* Ferrière, *Mitt. Schweiz. ent. Gesell.,* 16 : 84-93.
1939 *Ecrizotomorpha,* Mani, *Indian J. agric. Sci.,* 9 (3) : 538.
1959 *Herbertia,* Burks, *Proc. ent. Soc. Washington,* 61 : 249-255.
1979 *Herbertia,* Krombein *et al.,* Hymen. N. America, 1 : 793.

Female : Body dark blue; eyes hairy; vein *m* long; head and thorax finely shagreened; antennae with 10 segments; in female scape short, slender; pedicel shorter than club; vein *m* much longer than *st,* in the type species about 6 times *st, pm* long a little shorter than *st;* abdomen ovate; first tergite occupies 0.50 of abdomen; second tergite short; ovipositor generally exserted; parapsidal furrows sharp and complete, continuous with axillary furrows; axillae widely separated; mesoscutum and scutellum rather flat.

Male Very similar to female. Antennal flagellum shorter than in female, club equally flattened, but broader and rounded at tip; coxal projection less pronounced; metanotum more contracted behind; abdomen ovate, slightly truncate at tip, not flattened, second tergite occupying less than 0.50 of the dorsum.

Type-species : Herbertia lucens Howard.

Herbertia taskhiri (Mani)

1939 *Ecrizotomorpha taskhiri,* Mani, *Indian J. agric. Sci.,* 9 : 537-539.
1940 *Ecrizotomorpha taskhiri,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 9.
1959 *Herbertia indica,* Burks, *Proc. ent. Soc. Washington,* 61 : 252.
1978 *Ecrizotomorpha taskhiri,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 442.
1978 *Herbertia indica,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 444.

Female : Length varies between 0.90-1.50 mm. mean 1.25 mm. Body black, non-metallic; clypeus slightly metallic-blue; scape dark reddish-brown; rest of antenna reddish-brown; thorax black; veins dark brown; legs light brown, except coxae and femora which are concolorous with thorax; tibia slightly darker outside basally; knee pale.

Head slightly wider than long, thin at vertex and thick near mouth, with a few scattered setigerous punctae; ocelli almost in a line; scape a little over 0.50 of flagellum; pedicel much shorter than club; first funicular segment short, transverse narrow, trapezoid, resembling an annellus; second funicular segment subquadrate, 2 times first, broader; third segment like the first; fourth and fifth subequal to second but thicker; club 0.75 of scape, much thicker than last funicular segment; segments equal; terminal segment obtusely reduced and broadly rounded apically, with 2 long, stout, lateral spines and a much longer slender median spine.

Thorax scaly, with few scattered punctae or none, but setose.

Male : Length 1.00-1.50 mm. Body black; hind tibia dark brown; pedicel somewhat longer than the first funicular segment; funicular segments subglobose, except last which is somewhat elongated; first segment of club 0.50 of the length of club and 1.25 times the last funicular segment.

Type locality : India : Haryana.

Distribution : India; Haryana, Bihar : Pusa

Host : Hyperparasitic on *Dasyneura lini* Barnes in gall on flower of *Linum usitatissimum* Linn., *Melanagromyza coffeae* (Konigsberg) on *Coffea arabica, Liriomyza* sp. on *Mikania*

SUBFAMILY TERMOLAMPINAE

1961 *Termolampini,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 34 : 61.
1969 *Termolampini,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 249.

Parapsidal furrows incomplete, indicated only anteriorly; clypeus truncate in front; head and thorax irregularly deeply reticulate; antennal segments 12 : 1.1.2.5.3; body metallic coloured, generally densely hairy. Apparently related to Ormocerinae. Included genus *Termolampa* Boucek.

SUBFAMILY COLOTRECHNINAE

1875 *Colotrechnides,* Thomson, *Hym. Scand.,* 4 : 217.
1878 *Colotrechnides,* Thomson, *Hym. Scand.,* 5 : 46.
1886 *Colotrechnides,* Howard, *Ent. Amer.,* 2 : 33, 34.
1897 *Colotrechninae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 201.
1904 *Colotrochninae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 285.
1909 *Colotrechnini,* Schmiedeknecht, *Gen. Ins.,* 97 : 289.
1957 *Colotrechnini,* Boucek in Kratochvil, *Klic Zvireny CSR,* 2 : 232.
1964 *Colotrechninae,* Boucek, *Mem. Canad. Ent.,* 34 : 41.
1969 *Colotrechninae,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 850.
1979 *Colotrechninae,* Krombein *et al.,* Hymen. N. America, 1 : 778.

This subfamily includes the single genus *Colotrechnus* Thomson, which was placed by Ashmead under the Cleonymidae but as a tribe under his Miscogasterinae (= Miscogasteridae) by Schmiedeknecht. Boucek and Graham consider the subfamily as part of Pteromalidae, though there are unmistakable resemblance to Eulophidae.

Axillae advanced in front of scutellar base; vein *st* very short, *m* at least 3-4 times *st, pm* short; hind tibiae somewhat compressed with a row of spines above, spurs double, strong; hind coxae very long, femora somewhat compressed, spiracles touching anterior margin of propodeum; terminal 2 tergites clothed with hairs; antennal segments in female 1.1.2.6.3; in male 1.1.3.5.3; inner orbital borders parallel; frons without tubercles; scrobes not deep, not carinately margined; parapsidal furrows incomplete.

SUBFAMILY BRACHYSCELIDIPHAGINAE

1904 *Merisinae* (partim), Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 322.
1909 *Merisini* (partim), Schmiedeknecht, *Gen. Ins.,* 97 : 359.
1909 *Isoplatina,* (partim), Schmiedeknecht, *Gen. Ins.,* 97 : 364, 366.
1947 *Brachyscelidiphagini,* Gahan & Ferrière, *Ann. ent. Soc. America,* 40 : 271.
1969 *Brachyscelidiphagini,* Graham, *Bull. Brit. Mus. nat. Hist.* (Ent.) Suppl., 16 : 95.
1972 *Brachyscelidiphaginae,* Yoshimoto, *Canad. Ent.,* 104 : 969-976.
1979 *Brachyscelidiphaginae,* Burks in Krombein *et al.,* Hymen. N. America, 1 : 773.

It is not easy to define this group, somewhat different from other Chalcidoids. There is hardly some characters common to all of them, but not duplicated in other Chalcidoidea.

The genus *Brachyscelidiphagus* Ashmead is placed under the tribe Isoplatini of Merisinae in Pteromalidae by Schmiedeknecht. Graham places it near Ormocerinae under Miscogasteridae. They differ from other Lamprotatines chiefly by the more compact form of thorax and scutellum usually without frenum. Stigma exceptionally large; first tergite not very large; body metallic; mandibles simply acutely curved, without teeth; vein *m* not longer than *st*.

The species appear to be confined to Australia.

SUBFAMILY ORMOCERINAE (= TRIDYMINAE)

1833 *Ormoceridae* (partim), Walker, *Ent. Mag.*, 2 : 167.
1856 *Ormoceroidae* (partim), Förster, *Hym. Stud.*, 2 : 19, 24.
1856 *Hormoceroidae* (partim), Förster, *Hymen. Stud.*, 2 : 59.
1875 *Tridymina,* Thomson, *Hym. Scand.*, 4 : 12, 192.
1886 *Tridyminae,* Howard, *Ent. Amer.*, 1 : 198.
1899 *Tridyminae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 247.
1904 *Tridyminae,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 272.
1909 *Tridymini,* Schmiedeknecht, *Gen. Ins.*, 97 : 273.
1938 *Tridyminae,* Mani, *Cat. Indian Ins.*, 23 : 76.
1969 *Ormoceerini,* Graham, *Bull. Brit. Mus. nat. Hist.* (Ent.) Suppl., 16 : 250.
1979 *Ormocerini,* Krombein *et al.*, Hymen. N. America, 1 : 790.

Body metallic coloured; abdomen sessile; antennae usually with 12, rarely 13 segments; parapsidal furrows complete or incomplete; usually vein *pm* at least a little longer than *m*; vein *st* long, with large knob; ovipositor concealed; clypeus without tooth or tubercle, truncate or convex; pronotal collar not well defined, round in front.

KEY TO TRIBES

1. Parapsidal furrows complete — *Ormocerine*
   Parapsidal furrows indicated only anteriorly — *Metastenini*

Tribe ORMOCERINI

1904 *Tridymini,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 273.
1909 *Tridymina,* Schmiedeknecht, *Gen. Ins.*, 97 : 274.
1969 *Ormocerini,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 250.
1979 *Ormocerine,* Krombein *et al.*, Hymen. N. America, 1 : 790.

Species parasitize generally gall-midge larvae.

Clypeus truncate in front, not toothed, not with a tubercle; petiole short, transverse, smooth; pronotal collar not margined, rounded; pronotum less than 0.50 of mesoscutum; vein *pm* not or only slightly longer than *m*; antennae with 13 segments, with 2 or 3 annelli; parapsidal furrows complete.

KEY TO GENERA

1. Thorax closely rugosely punctate; vein *m* 2 times *st* — *Systasis* Walker
   Thorax largely smooth, sparsely punctate; wing with fringe — *Semiotellus* Westwood

Systasis Walker

1834 *Systasis,* Walker, *Ent. Mag.,* 2 : 228, 296.
1904 *Systasis,* Ashmead, *Mem. Carnigie Mus.,* 1 (4) : 274, 275.
1909 *Systalis,* Schmiedeknecht, Gen. Ins., 97 : 280.
1969 *Systasis,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 257.
1979 *Systasis,* Krombein *et al.,* Hymen. N. America, 1 : 791.

Body short; head transverse; frons with large punctae; scrobe short; antennae inserted in the middle of face; scape short; funicle slightly thickened; segments cylindrical; annelli distinct; club distinct, not produced apically; thorax closely finely punctate; parapsidal furrows complete; wings hyaline, slightly pubescent, with a bare area behind vein *m* having a row of long hairs; fringe short, vein *st* shorter than *m*; speculum large, reaching vein *m*; abdomen oval, slightly smaller than thorax; ovipositor hidden; clypeus truncate in front.

Type-species : Systasis encyrtoides Walker

Systasis cenchrivora Farooqi & Menon

1972 *Systasis cenchrivora,* Farooqi & Menon, *Mushi,* 46 : 111-114.
1978 *Systasis cenchrivora,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 458.

Type locality : India

Systasis dalbergiae Mani

(Fig. 134)

1942 *Systasis dalbergiae,* Mani, *Indian J. Ent.,* 4 : 157, 158
1978 *Systasis dalbergiae,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 459.

Female : Length 1.60 mm. Body bright metallic-green; scape dark brown ventrally and almost black dorso-apically; rest of antennae very dark brown; coxae, fore and hind femora concolorous with body, rest of legs yellow, except the paler hind tarsi.

Head viewed in front broadly rounded, interorbital space, height of head and width of head in the ratio of 21 : 28 : 35; ocellocular space about 1.25 times ocellar diameter; mandible tridentate; face rugosely punctate between scape and inner orbital border, just below insertion of antennae transversely reticulate; inserted a little above the lower borders of eyes.

Male . Legs pale yellow; except the dark tips of tarsi and metallic hind femora.

Type locality : Dehra Dun

Distribution : Dehra Dun

Host : Contarinia dalbergiae Mani causing gall on flowers of *Dalbergia sissoo*

Systasis vischnu (Motschulsky)

1863 *Eulophus vischnu,* Motschulsky, *Bull. Soc. Imp. nat. Moscou,* 36 (3) : 65.
1909 *Eulophus vischnu,* Schmiedeknecht, *Gen. Ins.,* 97 : 418.
1938 *Eulophus vischnu,* Mani, *Cat. Indian Ins.,* 23 : 115.
1978 *Systasis vischnu,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 459.

Female : Length 1.20 mm. "Elongatus, attenuatus, vix nitidus, punctatissimus, laere viridis, oculis, antennis tibisque nigro-fuscis, antennarum basi viridis, femoribus medio nigro-aeneis, geniculis tarsique subalbulis; capite subrotundato, depresso, postice excavato-truncato, punctulissimo, fronte subconvexo, ocellis subdistinctis, submetallicus, oculis ovalis, vix convexus, thorace capitis latitudine, elongato-attenuatus, subconvexus, punctulissimo, subnitidus, pronoto subquadrato utrinque obliquo impresso, segmentis triangularis, magnis, vix convexis, mesonoto subrotundato, metanoto vix exserto, postice truncato, abdomine thoracis latitudine et longitudine, arcuatim attenuato, depresso, nitido, alarum vena costalis distincta, fusca, vena radialis apice subrotundato."

Type locality : Summit of Mt. Patannas (Ceylon)

Distribution : Ceylon.

Semiotellus Westwood

1834 *Semiotus,* Walker, *Ent. Mag.,* 2 : 288. (not of 1829 Escholtz)
1840 *Semiotellus,* Westwood, *Modern Class. Ins.,* 2 : 70.
1856 *Stictonotum* Förster, *Hym. Stud.,* 2 : 64.
1904 *Semiotelus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 274, 275.
1909 *Semiotellus,* Schmiedeknecht, *Gen. Ins.,* 97 : 280.
1969 *Semiotellus,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 254.

Head hemispherical, somewht narrower than throax, shiny, eyes large, round; clypeus somewhat curved in advance of gena; antennae inserted in the middle of face; scape short, slightly thickened; annellus transverse; funicular segments 5, club long, triarticulate; thorax with only scattered large punctae; propodeum smooth, with median longitudinal carina; wings large, ciliate, fringe present, vein *pm* longer than *st*; abdomen ovate; ovipositor concealed.

Type-species : Semiotellus varians (Walker)

Semiotellus dasyneurae (Mani)

1939 *Systasis dasyneurae,* Mani, *Indian J. agric. Sci.,* 9 (3) : 535.
1978 *Systasis dasyneurae,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 459.

Female : Length 1.75-2.00 mm. Body bright metallic-green; eyes dark coppery-red; antennae dark above and light brown below; pedicel very dark metallic-green above and somewhat dark brown below; funicle and veins dark brown; all coxae and hind femora

concolorous with thorax; basal 0.75 of fore and middle femora dark coppery-brown; tibiae and tarsi yellowish-brown; terminal segment brown; abdomen with sparse white pubescence, denser apically than basally.

Head transverse, nearly 3 times as wide as long, somewhat wider than thorax, viewed in front nearly rounded; frons convex, reticulate and rugosely punctate, sparsely and finely setose; vertex rather narrow mesad, with a depression latero-caudad of lateral ocelli; ocelli in a slightly curved line, front one at apex of antennal foveae; ocellocular space nearly equal to ocellar diameter; malar space about 0.75 of eyes; clypeus truncate mesad and bidentate latero-anteriorly; left mandible tridentate and right with an additional very minute denticle between the second and third teeth; antennae inserted above level of lower orbital borders, segments 12 : scape reaching front ocellus, annelli 2, first transverse, second thicker and slightly wider; 3 subequal segments, first segment about 0.80 of pedicel, club 2 times pedicel, triarticulate, first segment about 1.25 times shorter than fifth funicular segment.

Thorax closely reticulate; mesonotum also with scattered larger, umbilicate punctae, parapsidal furrows complete, deep; axillae subreticulate; width of scutellum cephalad about 0.50 of length, sculpture reticulate, without frenum; propodeum very short, almost hidden by scutellum mesally, expanding laterally, reticulate, with well developed median and lateral carinae; median carina forking at apex, forks extending along caudal margin but not specially broad; lateral carinae at apex extending strongly mesad along caudal and lateral margin but more faintly; spiracles large round, situated near cephalic margin in an obscure impression whose caudal margin faintly carinate; fore wing 2 times as long as broad; vein *m* 2 times vein *st; pm* 1.25 times vein *st, st* round, *sm* distinctly broken before and abruptly more slender than *m;* 9 long setae in a straight line caudad of and parallel to vein *m*; marginal fringe moderately short; hind wing not specially narrow, their margins not parallel.

Abdomen somewhat longer than rest of body, conic-ovate or ovate, sculpture scaly; ovipositor not exserted.

Male : Length 1.50 mm. Except scape below at base, antennae dark brown; fore and middle femora except basal 0.33 dirty brown; hind femora concolorous with thorax; funicular segments elongate, first segment distinctly longer than pedicel but equal to pedicel and 2 annelli combined; second segment nearly equal to first, third slightly shorter, fourth equal to third, fifth a little over 0.75 of fourth; club as long as preceding 2 segments combined, first segment nearly as long as fifth funicular segment; mesonotum with umbilicate punctae more sparse than in female; propodeum moderately broad mesad; fore wing with *st* relatively larger; surface pubescence somewhat finer; hind wing relatively narrow with marigins subparallel; fore

and middle femora, except basal 0.33, dirty brown; hind femur concolourous with thorax; abdomen about 0.66 of the rest of body; other characters as in female.

Type locality : Pusa

Distribution : Pusa, Delhi, Nagpur

Host : Dasyneura lini Barnes, causing gall on flowers of *Linum usitatissimum.*

FAMILY PTEROMALIDAE

1835 *Pteromalidae* (partim), Walker, *Ent. Mag.*, 2 : 286.
1840 *Pteromalides* (partim), Westwood, *Introd. Mod. Class. Ins.*, 2 : 166. Synop. 67.
1846 *Spalangiidae* (partim), Walker, *List. Chalc. Brit. Mus.*, 1 : 23.
1846 *Pteromalidae* (partim), Walker, *List Chalc. Brit. Mus.*, 1 : 23.
1856 *Ormoceroidae* (partim), Förster, *Hym. Stud.*, 2 : 59.
1856 *Pteromaloidae* (partim), Förster, *Hym. Stud.*, 2 : 19, 25, 63.
1875 *Pteromalina* (partim), Thomson, *Hym. Skand.*, 4 : 12, 217.
1886 *Pteromalinae* (partim), Howard, *Ent. Amer.*, 1 : 198.
1897 *Pteromalidae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 246.
1904 *Pteromalidae,* Ashmead, *Mem. Carnegie Mus.*, 1(4) : 311.
1909 *Pteromalinae,* Schmiedeknecht, *Gen. Ins.*, 97 : 303.
1913 *Pteromalidae,* Kurdjumov, *Russk. ent. Obozr.* 13 : 1-24.
1915 *Pteromalidae,* Girault, *Mem. Queensland Mus.*, 4 : 313.
1938 *Pteromalidae,* Mani, *Cat. Indian Ins.*, 23 : 97.
1957 *Pteromalidae,* Boucek in Kratochvil, *Klic. Zvireny, CSR,* 2 : 220.
1964 *Pteromalidae,* Boucek, *Mem. ent. Soc. Canada,* 34 : 26.
1969 *Pteromalidae,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 1-908.
1970 *Pteromalidae,* Riek, In CSIRO, *Ins. Australia.* 920.
1978 *Pteromalidae,* Boucek, Subba Rao & Farooqi, *Orient Ins.*, 12(4) : 433-468.
1979 *Pteromalidae,* Krombein *et al.*, Hymen. N. America, 1 : 768.

This is the largest and a difficult family of the Chalcidoidea. Almost all species are parasitic, but a very few are gall formers, a few are phytophagous and some others should be considered to be predaceous. The latter feed, as larvae, on a succession of eggs and larvae of their prey, while enclosed within stems of grasses or other herbaceous plants. The family is closely connected with the Miscogasteridae through Sphegigasterinae and is differentiated entirely by the presence of a single hind tibial spur. In most Miscogasteridae the parapsidal furrows are complete, though sometimes somewhat faint behind, but with the exception of only 4 genera like *Coruna* in the Pteromalidae the furrows are either incomplete and indicated only anteriorly or obscure; nearly all Pteromalidae have 13 antennal segments, but not so in Miscogasteridae.

There is at present considerable difference of opinion about the limits of this family; some workers lump with it not only the Miscogasteridae but also other totally heterogenous groups like

Torymidae, Perilampidae and Cleonymidae. This not merely compounds the confusion and adds to the difficulty in identification but is also totally unwarranted. With all its defects, the concept of Ashmead about Pteromalidae and Miscogasteridae is still to be replaced by anything better I follow Ashmead, with only slight modifications in the light of some recent contributions, in considering Miscogasteridae and Pteromalidae as separate families for the present.

Head normal, not depressed and oblong; pronotum normal, not exceptionally large, generally narrow, subquadrate or conically produced in front and shorter than mesonotum; thorax not exceptionally enlarged and bulging, mostly with the parapsidal furrows incomplete, obscure and at the most indicated only anteriorly and evanescent or absent behind; axillae not triangularly produced forwards into scapula in advance of tegula; mesopleura not bulging, but with a well developed femoral impression; middle tibial spur never stout and larger than others; hind tibial spur single; hind femora not swollen and dentate; hind coxae not swollen.

KEY TO SUBFAMILIES

1.	Abdomen sessile or nearly so.	2
	Abdomen distinctly petiolate.	4
2.	Head very wide, much wider than thorax; antennal segments 6-10, inserted close to the mouth border; scutellum large, often extending behind over propodeum; posterolateral angles of propodeum acutely pointed	*Eunotinae*
	Head not exceptionally wide; antennal segments 12-13; scutellum normal.	3
3.	Propodeum with spiracular sulci, lateral folds (plica lateralis) and usually also median longitudinal carina.	*Pteromalinae*
	Propodeum without spiracular sulci and usually also without lateral folds; antennal segments 12-13, apically mucronate.	*Merisinae*
4.	Fore wing with vein *m* very long; vein *st* usually with a small knob; antennal segments 13, scape long, reaching beyond front ocellus; pronotum rather large.	5
	Fore wing with vein *m* not very long, often short and thick.	8
5.	Antennal sockets situated on either side of clypeus and contiguous with the oral fossa; antennae without or sometimes with a single annellus; funicular segments 5; mandible with 2 teeth; petiole long.	*Neodiparinae*
	Antennal sockets distinctly separate from the oral fossa.	6

6. Vertex with 6-12 stout dark bristles, in addition to the usual pubescence; scutellum with 4 similar bristles; petiole inserted high on propodeum above hind coxae; antennal segments 12-13, including one annellus and funicular segments 7 in female, funicular segments 9 in male. *Diparinae*

Vertex without bristles; petiole attached normally in between hind coxae. 7

7. Antennal segments 13 : 1.1.2.6.3; wings not spotted; fore wing with vein *m* about 4 times as long as *st*. *Panstenoninae*

Antennal segments 11 : 1.1.1.7.1; wings spotted; vein *m* much longer than 4 times *st* *Netomocerinae*

8. Fore wing with vein *m* more or less conspicuously thickened. 9

Fore wing with vein not exceptionally thickened 12

9. Head lenticular, with occiput deeply excavate, acutely margined above; antennae inserted close to the mouth border; parapsidal furrows well developed, complete. *Asaphinae*

Head not lenticular; antennae inserted in the middle of face. 10

10. Vein *pm* exceptionally thickened. *Pachyneuroninae*

Vein *pm* not exceptionally thickened. 11

11. Head large, with tubercles or crests on frons and face; antennal segments 13 : 1.1.8.3 *Cratominae*

12. Body clothed with short scale-like hairs; vein *pm* absent; vein *m* curved, subequal to *st;* parapsidal furrows complete. .. *Eutrichosomatinae*

Body without scale-like hairs. 13

13. Antennal sockets contiguous with the lower edge of head on a projection below clypeus; antennae without annellus, funicular segments 7, club solid or with 3 segments; body with setigerous punctae; mandibles with 2 teeth. *Spalangiinae*

Antennal sockets separated from lower edge of head; body ant-like in general appearance; head with a crest or tubercle on either side of clypeus; antennal segments 8-11, without annellus or with one annellus in male; vein *m* very long, *st* short, *pm* equal to *st* or shorter; sometimes wings vestigial. *Cerocephalinae*

SUBFAMILY EUNOTINAE

1863 *Muscidides,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (2) : 69.

1872 *Eunotidae,* Walker, *Notes Chalcid.,* 4 : 100.

1898 *Muscideinae,* Dalla Torre, *Cat. Hym.,* 5 : 87.

1904 *Eunotinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 325.

1909 *Eunotini,* Schmiedeknecht, *Gen. Ins.,* 97 : 304.
1931 *Eunotini,* Masi, *Eos,* 7 : 411-459.
1938 *Eunotine,* Mani, *Cat. Indian Ins.,* 23 : 97.
1969 *Eunotinae,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 27, 67.
1979 *Eunotinae,* Krombein *et al.,* Hymen. N. America., 1 : 782.

The subfamily is easily recognised by the squat shape of body.

Body short, depressed; head much wider than thorax; antennae with 6-10 segments, inserted close to mouth border; scutellum large; hind angles of propodeum acute.

This peculiar group is predominently found in the tropics, but a few species occur in temperate region. The species are generally parasitic in scale-insects.

KEY TO GENERA

1.	Females ..	2
	Males.	9
2.	Scutellum abnormally large, extending over propodeum and covering most of abdomen	3
3.	First abdominal tergite large, occupying most of dorsum of abdomen; eyes hairy.	*Eunotus* Walker
	First abdominal tergite not exceptionally large, at the most only 0.50 of the dorsum of abdoben	4
4.	Fore wing with vein *pm* absent or shorter than *st*	5
	Fore wing with vein *pm* not short, usually longer than *st*.	8
5.	Vein *pm* absent; second tergite largest; basal tergites with hairtufts at the sides.	*Moranila* Cameron
	Vein *pm* present, shorter than *st*.	6
6.	Antennae with 6-9 segments in female; body black	7
	Antennae with 10 segments in female; funicular segments stout, transverse apically; body metallic-green.	*Mnoonema* Motschulsky
7.	Pronotum without a median depression.	*Cephaleta* Motschulsky
8.	Antennae with 8 segments, clavate; funicular segments 2-4 transverse.	*Muscidea* Motschulsky
9.	Scutellum abnormally large.	*Scutellista* Motschulsky
	Scutellum not abnormally large.	10
10.	First tergite exceptionally large; eyes pubescent	*Eunotus* Walker
	First tergite not exceptionally large.	11
11.	Vein *pm* absent.	*Moranila* Cameron
	Vein *pm* present.	12
12.	Vein *pm* shorter than *st*.	13
	Vein *pm* longer than *st*.	*Mnoonema* Motschulsky
13.	Antennae stout, short.	*Cephaleta* Motschulsky
	Antennae filiform.	*Muscidea* Motschulsky

Scutellista Motschulsky

1859 *Scutellista,* Motschylsky, *Etud. Ent.,* 8 : 172.
1863 *Aspidocoris,* A. Costa, *Boll. Acad. Sci. Naples,* 24.
1878 *Enargopelte,* Förster, *Verh. Naturh. Ver. Rheinland,* 35 : 62.
1904 *Scutellista,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 325.
1904 *Enargopelte,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 326.
1909 *Enargopelte,* Schmiedeknecht, *Gen. Ins.,* 97 : 304, 305.
1909 *Scutellista,* Schmiedeknecht, *Gen. Ins.,* 97 : 305.
1912 *Scutellista,* Kurdjumov, *Russk. ent. Obzr.* 12 : 331.
1931 *Scutellista,* Masi, *Eos,* 7 : 456.
1931 *Enargopelte,* Masi, *Eos,* 7 : 443.
1938 *Scutellista,* Mani, *Cat. Indian Ins.,* 23 : 98.
1943 *Enargopelte,* Kryger, *Ent. Meddr.,* 22 : 78.
1952 *Scutellista,* Nikolskaya, *Chalcid fauna USSR,* 234.
1963 *Scutellista,* Peck, *Cand. Ent.* (Suppl.), 30 : 633-636.
1964 *Scutellista,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 32.
1969 *Scutellista,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 23 : 75.
1979 *Scutellista,* Krombein *et al.,* Hymen. N. America, 1 : 784.

Head very thick, lenticular, wider than thorax, acutely margined behind; antennae with 8 or 9 segments, clavate; scutellum abnormally large, 2 or more times longer than mesoscutum extending over great part of abdomen; mandibles with 3 teeth, inner tooth obtuse; propodeum not produced behind beyond base of hind coxae; scutellum largely reticulate; fore wing hairy in basal part; vein *sm* scarcely sinuate apically; *m* not thickened; first tergite with hair tuft basally; annelli absent, funicle with 4-5 segments, antennae inserted below level of lower orbital borders.

Type-species : Scutellista cyanea Motschulsky

Scutellista cyanea Motschulsky

(Fig. 135)

1832 *Encyrtus caeruleus,* Fonscolombe, *Ann. Sci. Nat. Zool.,* (1) 26 : 304.
1859 *Scutellista cyanea,* Motschulsky, *Etud. Ent.,* 8 : 171-173.
1863 *Scutellista cyaneus,* A. Costa, *Ann. Acad. Aspiranti Nat. Napoli,* (3) 3 : 24.
1863 *Aspidocoris myrti,* (Haliday) A. Costa, *Bull. Ann. Acad. Aspiranti Nat. Napoli,* 3 : 24.
1896 *Scutellista cyanea,* Howard, *Rev. Patol. Veg.,* 5 : 81-87.
1898 *Scutellista cyanea,* Cockerell, *Proc. ent. Soc. Washington,* 4 : 65.
1898 *Scutellista cyanea,* Howard, *Bull. US Dept. Agric. Div. Ent.,* 17 : 13-16.
1900 *Scutellista cyanea,* Howard, *Bull. US Dept. Agric Div. Ent.,* 26 : 16-17.
1903 *Scutellista cyanea,* Marlatt, *US Dept. Agric. Farmers' Bull.,* 172 : 29-30.
1904 *Scutellista cyanea,* Marlatt, *Bull. US Dept. Agric. Div. Ent.,* 44 : 50-58
1907 *Scutellista cyanea,* Masi, *Boll. Lab. Zool. Gen. agr. Roy. Scuola Agr. Portici,* 1 : 286.
1909 *Scutellista cyanea,* Schmiedeknecht, *Gen. Ins.,* 97 : 305.

1911 *Scutellista cyanea,* Quayle, *Bull. Calif. Agr. exptl. Sta.,* 214 : 456-459; 223 : 179-187.
1928 *Scutellista cyanea,* Smith & Compere, *Univ. Calif. Pub. Ent.,* 4 : 322.
1931 *Scutellista cyanea,* Masi, *Eos,* 7 : 457.
1938 *Scutellista cyanea,* Mani, *Cat. Indian Ins.,* 23 : 98.
1940 *Scutellista cyanea,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 17.
1963 *Scutellista cyanea,* Peck, *Canad. Ent.,* 30 : 633.
1969 *Scutellista cyanea,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 23 : 76.
1978 *Scutellista cyanea,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 456.
1979 *Scutellista cyanea,* Krombein *et al.,* Hymen. N. America, 1 : 784.

Female : Length 0.75 mm. Body blue-black, shiny, clothed with fine brownish pubescence, with blue reflections; eyes black; wings hyaline.

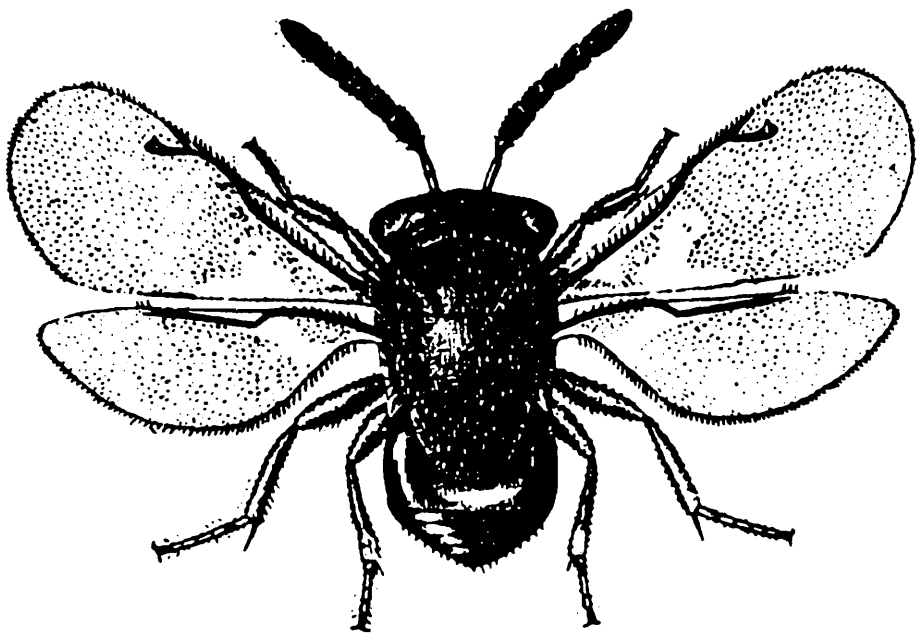

FIG. 135. *Scutellista cyanea* Motschulsky, male.

Body shortly ovate, convex, finely rugosely punctate; head transverse, narrow, subcarinate between antennae; impunctate; triangularly impressed above carina; antennae inserted in the middle of face, in female clavate; scape elongate; subcylindrical; pedicel short, transverse; funicular segments 1-5 short, slightly thicker; sixth segment large, elongate-ovate; segments in male linear, slender; scape elongate; pedicel short, segments 1-4 of funicle subcylindrical, subequal; fifth segment longer, conical; thorax transverse, a little narrower than head, narrowed behind scutellum convex, large, long, triangularly arcuate, rounded apically; abdomen as wide as thorax, subquadrate, glabrous, shiny; wings longer than abdomen; hyaline, hind tibial spur long.

Type locality : Ceylon : Mt. Patannas

Distribution : Ceylon, India, Australia, Italy, France, Spain, China, Hawaii, Africa, California, Louisiana.

Host : Ceroplastes rusci, C. sinensis, C. galeatus, Saissetia haemispherica, S. nigra, S. oleae, S. persicae, Phaenococcus artemisiae, Coccus hesperidum, Eulecanium ficinum.

Mnoonema Motschulsky

1863 *Mnoonema,* Motschulsky, *Bull. Soc. Imp. nat. Moscou,* 36 (3) : 59.
1904 *Mnoonema,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 326.
1909 *Mnoonema,* Schmiedeknecht, *Gen. Ins.,* 97 : 307.
1938 *Mnoonema,* Mani, *Cat. Indian Ins.,* 23 : 100.

Antennae in male and female with 10 segments; in female segments large, transverse, narrow apically; body metallic-green, punctate; fore wing with vein *pm* short, not equal to or longer than vein *st,* but usually shorter; second abdominal tergite short, not occupying more than 0.50 of abdomen.

Type-species : Mnoonema timida Motschulsky

Mnoonema timida Motschulsky

1863 *Mnoonema timida,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 60.
1909 *Mnoonema timida,* Schmiedeknecht, *Gen. Ins.,* 97 : 307.
1938 *Mnoonema timida,* Mani, *Cat. Indian Ins.,* 23 : 100.
1978 *Mnoonema timida,* Boucek, Subba Rao & Farooqi, Orient. Ins., 12(4) : 446.

Length 4.00 mm. "Elongata, subparallela, vix gibbosa, subdepressa, punctata, nitida, viridi metallica, cinereo puberula, antennarum scape, pedibusque rufo-testaceis, tarsis subalbidis, apice infuscatis; capite subdepresso, punctulato, postice subexcavato-truncato, antice subconvexo, ocellis triangulatier postis, subnigris, oculis subovatis, vix prominulis, nigris, antennis thorace brevioribus, latis depressis, antice attenuatis; thorace capite angustiore, crebre punctato, antice posticeque attenuato; abdomine elongato-elliptico, depresso, antice convexo, glabro viridi splendido, medio et apice nigro, segmento 4-o lato, punctato, sparsim puberulo; femoribus simplicis."

Type locality : Ceylon : Mt. Patannas

Moranila Cameron

1881 *Tomocera,* Howard, *Ann. Rpt. US Dept. Agr.,* 368.
(preoccupied in Desmarest, 1858).
1883 *Moranila,* Cameron, *Trans. ent. Soc. London,* 29 (2) : 188.
1886 *Dilophogaster,* Howard, *Ent. Amer.,* 2 : 98.
1904 *Tomocera,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 328.
1909 *Tomocera,* Schmiedeknecht, *Gen. Ins.,* 97 : 368, 369.
1917 *Eunotomyia,* Masi, *Novitates Zool.,* 24 : 297.
1924 *Tomocera,* Mercet, *Bol. Real Soc. Espan. Hist. Nat.,* 24 : 422.

1928 *Tomecera,* Masi, *Boll. Soc. ent. Ital.,* 60 : 56.
1928 *Tomocera,* Smith & Compere, *Univ. California Publ. Ent.,* 4 : 317.
1952 *Tomecera,* Nikolskaya, *Chalcid fauna USSR,* 236.
1958 *Moranila,* Burks, Hymen. N. America, 2 : 75.
1963 *Moranila,* Peck, *Canad. Ent.,* 30 : 631.
1964 *Moranila,* Peck *et al., Mem. ent, Soc. Canada,* 34 : 31.
1969 *Moranila,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 70.
1979 *Moranila,* Krombein *et al.,* Hymen. N. America., 1 : 783.

Head large, wide; vertex acutely margined behind; antennae inserted below level of lower orbital border close to the mouth, with 10 segments: 1.1.5.3; without annelli; funicular segments 3-5 produced above at tip; club long, stout, longer than the preceding 3 segments combined; face projecting broadly between antennae; pronotum margined, narrower than mesonotum, scutellum longer than wide, wider behind than in front; vein *sm* sinuate; vein *m* hardly longer than *st, pm* absent; second tergite longest; basal tergites with hair tufts laterally; propodeum strongly produced beyond base of hind coxae, about 0.50 of scutellum.

Type-species : Moranila californica (Howard)

Moranila californica (Howard)

1881 *Tomocera californica,* Howard, *Annual Rpt. US Dept. Agric.,* 252, 368.
1883 *Moranila testaceiceps,* Cameron, *Proc. Trans. ent. Soc. London,* 188.
1906 *Tomocera ceroplastis,* Perkins, *Proc. Hawaii. ent. Soc.,* 1 : 75.
1915 *Tomocera glabriventris,* Girault, *Mem. Queensland Mus.,* 4 : 207.
1915 *Tomocera flaviceps,* Girault, *Mem. Queensland Mus.,* 4 : 208.
1924 *Tomocera californica,* Mercet, *Boll. R. Soc. esp. Hist. nat.,* 24 : 424.
1924 *Moranila californica,* Timberlake, *Proc. Hawaii. ent. Soc.,* 5 : 425.
1928 *Tomecera californica,* Masi, *Boll. Soc. ent. Ital.* 60 : 57.
1928 *Tomocera californica,* Smith & Compere, *Univ. California Publ. Ent.,* 4 : 317.
1958 *Moranila californica,* Burks, Hymen. N. America, 2 : 75.
1963 *Moranila californica,* Peck, *Canad. Ent.,* 30 : 631.
1964 *Moranila californica,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 31.
1969 *Moranila californica,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 70.
1978 *Moranila californica,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12(4) : 446.
1979 *Moranila californica,* Krombein *et al.,* Hymen. N. America, 1 : 783.

Female : Length 2.10 mm. Dark metallic-green, abdomen very dark purple, legs reddish excepting the hind femur above and the middle and hind tibiae; scape and head reddish, rest of antenna black; pedicel much longer than any of the funicular segments, of which one is subquadrate, others gradually widening.

Thorax finely reticulated, lines not raised, axillae polished, not sculptured; abdominal petiole scaly, scutellum finely striate longitudinally and near apex bearing a very fine convex cross-suture

distad of which it is brassy; propodeum short, with lateral carinae, but the median one at base only; apical margin of fore wing hyaline, large black spot not touching the curved distal part of vein *sm* as in *Tomicobomorpha stellata* and is almost kite-shaped, the proximal part pointed; lateral, propodeum glabrous; pleura glabrous; 4 long setae from about centre of scutum, first pair closer together; long setae from cephalic margin of pronotum.

Type locality : California.

Distribution : California, Mexico, Hawaii Islands, South Sea Islands, Australia, Africa, Eurasia.

Host : Antonina bambusa Mask., *Asterolecanium* sp. *Ceroplastes* sp. *Coccus hesperidum* Linn., *Saissetia coffeae* (Walker), *S. nigra* (Niet.), *S. oleae* (Bern.) *Microterys flavus* (Howard).

Muscidea Motschulsky

1863 *Muscidea,* Motschulsky, *Boll. Soc. Imp. Nat. Moscou,* 36 (2) : 70.
1904 *Muscidea,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 326.
1909 *Muscidea,* Schmiedeknecht, *Gen. Ins.,* 97 : 306.
1938 *Muscidea,* Mani, *Cat. Indian Ins.,* 23 : 99.

Abdomen oval, convex, longer than thorax; antennae very short, clavate, with 9 segments; segments 4-7 nearly transverse; tarsi with 4 segments; first segment 2 times longer than the following segment; head large, transverse, excavate behind, a little convex in front; ocellus minute, very distantly triangular; lateral ocelli contiguous to eye; eyes large, oval, convex but more projecting.

Thorax nearly as wide as head, rectangular and curved in front, convex, dull, with very short pubescence; pronotum transverse; mesonotum very short and nearly as wide as pronotum, curved anteriorly; propodeum transversely quadrate, shortly projected.

Abdomen sessile, broad, convex, dorsum depressed, oval, acuminate posteriorly, pubescent; second tergite slightly longer than the first tergite and the following combined together; wings hyaline, pubescent; vein *sm* entire, testaceous-brown, vein *st* long and clavate apically; stigma merely indicated.

Type-species : Musidea pubescens Motschulsky

Musidea pubescens Motschulsky

1863 *Musidea pubescens,* Motschulsky, *Buoll. Soc. Imp. Nat. Moscou,* 36 (2) : 71.
1909 *Musidea pubescens,* Schmiedeknecht, *Gen. Ins.,* 97 : 306.
1938 *Musidea pubescens,* Mani, *Cat. Indian Ins.,* 23 : 99.

Length : Body 2.00 mm., head 0.62 mm.

"Brevis, subovata, convexa, brevissime sparsim sito-pubescens, antice crebre rugoso-punctato, postice subtiliter punctatissimo, vix

nitida, nigro-subcyanea, antennarum articulis octo primis pedibusque rufo-lestaceis, tarsorum apice femoribusque plus minusve infuscatis; capite lato, crasso, subtiliter rugoso-punctato, postice transversim-striguloso, fronic laeviore, subconvexo, ocellis nigris, triangulariter-distantis, oculis magnis, subovatis, vix convexis, antennis thoracis longitudine, subclavatis; thorace capite paulo angustiore, fere cubico, convexo, crebre punctalo-rugoso, postice subattenuato, transversim truncato; abdomine sessile, seriatim transverso puberulo orato, supra convexo, subtus deplanato, antice thoracis latitudine, medio ovatim dilatato, postice attenuato, apice brevissime testaceo-mucronato (Female) (?) segmentis margine nitido."

Type locality : Ceylon

Promuscidea Girault

1917 *Promuscidea,* Girault, *New Javanese Hymenoptera Washington,* D.C.
1917 *Eriaporus,* Waterston, *Bull. ent. Res.,* 7 : 320.
1947 *Eurymyiocnema,* Compere, *Bull. ent. Res.,* 38 : 383.
1969 *Promuscidea,* Subba Rao, *Ent. Mon. Mag.,* 105 : 170.

Female : Head in front broad, narrowed below; clypeus straight; toruli quadrangular, just clear of the lower orbital border; scrobes deep, converging and meeting in front of the anterior ocellus; interscrobal carina present; frons and vertex broad, margined; eyes moderate, a little prominent, bare; vertex and frons with a few remarkable stout curved spine-like bristles in addition to others of a more usual calibre; antenna with 11 segments: 1.1.2.4.3; club with distal suture indistinct; mandibles bidentate, upper tooth with broad edge; maxillary palpi and labial palpi both with 3 segment.

Pronotum broad, not deeply emarginate antero-medianly; spiracular emargination very small; posterolateral angles extending considerably beyond the hind marginal row of bristles; parapsidal furrows straight, distinct and deep; scutum with numerous stout bristles; parapsides with a longitudinal row of 5 spinose bristles and 3 even stouter before the tegula, deeply invaded by axillae, which bear several spinose or weaker bristles; scutellum with 6 bristles; 2 sensory pustules minute and posterior; mesophragma very short, apically bilobed; prepectus quadrate with a narrow median connection; pleurae distinctly impressed; a strong internal chitinisation from the anteroventral angle of the episternite to the insertion of mid coxae; epimeron separated off by an incrassation, except just above coxae; metanotum and propodeum broad, narrow, medianly carinate; fore wing with the junction of vein *m* and *sm* thickened; vein *m* long; *pm* and radius well developed, subequal; *sm* with long stout bristles; *sm* cell rather deep; basal area of wing bare; hind wing with hind margin very concave near base; fore legs with one stout long spinose black femoral bristle, subapical and ventral; first tarsal comb not transverse, lateral but occupying the mid 0.50 of the ventral edge;

mid legs with 2 heavy subapical spinose femoral bristles and a rather weak long frayed tibial spur; hind coxae large and broad; femora with a distinct anteroventral groove on apical 0.66, receiving the folded tibia, edge posteriorly flattened; tibia bicalcarate; metatarsus long and the fifth somewhat expanded.

Abdominal tergites subequal, first shorter than 2-4; free portion of ovipositor sheath short.

Type-species : Promuscidea unifaciativentris Girault

Promuscidea laticeps (Waterston)

1917 *Eriaporus laticeps,* Waterston, *Bull. ent. Res.*, 7 : 321.
1969 *Eriaporus laticeps,* Subba Rao, *Ent. mon. Mag.*, 105 : 170.

Female : Length 1.50 mm. Vertex and frons pale yellowish; antennae pale, scape tinged reddish-brown funicle more or less infuscated; occiput blackish-brown, gena yellowish-brown; thorax and abdomen blackish-brown, tegulae distinctly pale and the anterior edge of pronotal collar narrowly lighter; abdominal segment with 2 large yellow spots, separated medianly by rather less than their own breadth of ground-colour; each spot anterolaterally with a much smaller paler obscure brown mark; wings hyaline, clouded narrowly at the junction of veins *sm-m;* fore coxa pale, hind coxa concolorous with thorax, middle coxa pale, slightly darker externally; otherwise legs pale; claws brown.

Head in front width to length 4 : 3; frons broad, ventrolaterally well developed, genal keel far back, with the lower rounded angle of eye in front; toruli 2.25 times their own length from the clypeal edge, a little more than their own length apart, and about 1.50 times their length from the orbits, reticulation large, distinct and regular, especially above; in each upper frontal angle 4 stout bristles, 2 on upper orbit; 7-8 minute and weaker bristles with about as many more towards the outside of scrobes; similar weak bristles between toruli; head inside thin, gena flattened; from above head lenticular, markedly concave posteriorly, occiput margined; ocelli in a broad triangle, posterior pair on the occipital edge, with 2 stout bristles between; scape longer than club, and as long as pedicel, annelli, first and 0.33 of the second funicular segments; pedicel 0.50 of scape; annelli distinct, edge of second covered on inner aspect by a flange of first; funicular segments cylindrical, subequal; first and second longer than thick; club exceeding the length of the last 2 funicular segments combined; pedicel with several scattered bristles, one stouter and spinose externally before the upper apical angle.

Mesonotum broad; scutum much broader than long and equal to scutellum with about 35 stiff bristles, of which 2 placed almost on the suture; axillae large, with one longer bristle at inner angle, another shorter well in advance, and 4-6 much shorter along the hind

margin; scutellum with stout bristles overhanging the propodeum, another similar pair in front, and third pair inwardly displaced at 0.33 from the suture; propodeum broadly smooth medianly, except for one or 2 raised cells in the antero-median angles of 2 closely applied ridges; no prespiracular lateral keels; spiracle oblong-oval; edge of a distinct elongate sulcus; 12-15 bristles outside the spiracle; propodeum laterally ridged and expanded, with the posterolateral angles right-angled and the sides a little convexly convergent; fore wing length a little over 2 times width; hind wing about 3.66 times as long as broad, bristles at the hooks; discal ciliation short, regular, only the base narrowly bare; fore coxa large; femur length thickness ratio 8 : 3; tibia with apical comb interrupted, 2 spines at base of spur, 3 heavier ones above the base of tarsus and one preapical median spine; comb of first tarsal segment with 8-9 spines; hind coxa very large, only a little shorter; femur very coarsely raised-reticulate on the outer posterior aspect; femur 3 times longer than thick; tibia moderately flattened, densely clothed with bristles, along the dorsal edge 30 or upwards stouter and hyaline; at the upper anterior apical angle 2 short stout spines and 2 others not so strong below the middle just clear of 2 spurs; posterior comb consists of 12-13 spines.

Abdomen about 0.20 times wider than thorax and 0.25 times longer, sides very convex, posteriorly shortly pointed; tergite one longest, 2-5 subequal, 6 shorter; ovipositor the free portion of sheath bears 5 bristles proximally and 10 in the pointed apical 0.50.

Type locality Africa : Gold coast

Distribution : Africa; India : Mysore, Pusa (Bihar)

Host : Anomalococcus

Promuscidea unifasciativentris Girault

1917 *Promuscidea unifasciativentris,* Girault, *New Javanese Hymenoptera Wasington,* D.C.

1969 *Promuscidea unifasciativentris,* Subba Rao, *Ent. Mon. Mag.,* 105 : 170.

Type locality : Java

Distribution : India, Java

Host : Planococcus litacinus (Ckll.) *Rastrococcus iceryoides* (Green), *Nipaecoccus vastator.*

Cephaleta Motschulsky

1859 *Cephaleta,* Motschulsky, *Etud. Ent.,* 8 : 173.

1863 *Cardiogaster,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (2) : 72.

1904 *Cephaleta,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 326.

1904 *Cardiogaster,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 326.

1909 *Cephaleta,* Schmiedeknecht, *Gen. Ins.,* 97 : 308.

1909 *Cardiogaster,* Schmiedeknecht, *Gen. Ins.,* 97 : 307.

1938 *Cephaleta,* Mani, *Cat. Indian Ins.,* 23 : 100.

1938 *Cardiogaster,* Mani, *Cat. Indian Ins.,* 23 : 99.

Head a little narrower than thorax; antennae with 7 segments in female, subclavate; fore wing with vein *pm* longer than *st;* antennae in male with 7 segments 5 branches; second tergite short; scutellum not extending over abdomen.

(The male described by Motschulsky may really be an Eulophid).

The description of the genus by Motschulsky is very vague.

Type-species *Cephaleta purpuriventris* Motschulsky

Cephaleta australiensis (Howard)

1896 *Anysis australiensis,* Howard, *Canad. Ent.,* 28 : 167.

1978 *Cephaleta australiensis,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 438.

"*Female :* Length 1.70 mm., expanse 3.80 mm; greatest width of fore wing 7.40 mm. Body blue-black, slightly metallic, glistening. Head and thorax with short, sparse, yellowish pile; face delicately shagreened and with fine sparse punctures; mesonotum similarly punctured; metanotum, pleura and abdomen smooth; metanotum with a median longitudinal carina; antennae light brown, tip of club darker, pedicel and tip of scape above black; all femora nearly black in middle, lighter at either end; tibiae brown. Wing veins dark brown, fore wing infuscated, hind wing hyaline."

Distribution : Pakistan : Sialkot; India : Aligarh, Assam, Orissa, Maharashtra, Andhra Pradesh; Bangladesh : Dacca; Ceylon : Ambepussa.

Hosts : coccid on *Hibiscus rosasinensis, Gossypium* sp., *Tephrosia candida, Cerococcus* on *Alternanthira philoxeroides;* mealybug on *Cajanus indicus.*

Cephaleta brunniventris Motschulsky

(Fig. 136)

1859 *Cephaleta brunniventris,* Motschulsky, *Etud. Ent.,* 8 : 174.

1859 *Cephaleta purpuriventris,* Motschulsky, *Etud. Ent.,* 8 : 174.

1860 *Pteromalus magniceps,* Walker, *Ann. Mag. Nat. Hist.,* (3) 6 : 359.

1860 *Encyrtus obstructus,* Walker, *Ann. Mag. Nat. Hist.,* (3) 6 : 359.

1863 *Cardiogaster fusciventris,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (2) : 72.

1863 *Cephaleta brunniventris,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 73.

1903 *Eurycephalus alcocki,* Ashmead, *Indian Mus. Notes,* 5 : 61.

1905 *Eurycranium saissetiae,* Ashmead, *Proc. US Nat. Mus.,* 29 : 405.

1909 *Cardiogaster fusciventris,* Schmiedeknecht, *Gen. Ins.,* 97 : 307.

1909 *Cephaleta purpuriventris,* Schmiedeknecht, *Gen. Ins.,* 97 : 308.

1909 *Pteromalus magniceps,* Schmiedeknecht, *Gen. Ins.,* 97 : 347.

1916 *Eurycranium saissettiae,* Girault, *Mem. Queensland Mus.,* (Gen. Suppl.) 5 : 227.

1928 *Anysis saissettiae,* Smith & Compere, *Univ. California Pub. Ent.,* 4 : 309.
1938 *Cephaleta brunniventris,* Mani, *Cat. Indian Ins.,* 23 : 101.
1938 *Cephaleta purpuriventris,* Mani, *Cat. Indian Ins.,* 23 : 101.
1938 *Cardiogaster fusciventris,* Mani, *Cat. Indian Ins.,* 23 : 100.
1938 *Pteromalus magniceps,* Mani, *Cat. Indian Ins.,* 23 : 102.
1940 *Cardiogaster fusciventris,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 18.

Female : Length 1.50 mm. Head and thorax shiny black, with traces of blue sheen in certain angles; abdomen shiny purple-violet, becoming blackish at base; ovipositor sheath black; scape, funicle and club brown, but often scape lighter and first club segment also paler; pedicel dark brown to black; legs brownish-yellow except for the following : fore coxae and femora shiny black; fore tibia suffused with black, tip subwhite; middle femora and tibiae fuscous; apical segments of all tarsi and metatarsus of fore legs fuscous; all legs clothed with fine white pubescence.

Head viewed from above very slightly wider than thorax; frontovertex more than 0.33 times as wide as head; ocellar triangle right-angled; ocellocular space slightly less than ocellar diameter and contiguous to occipital margin; frontovertex faintly sculptured and shiny; eyes glabrous; head in front view almost 0.25 times wider than high; antennae inserted between lower orbital line and oral margin; scrobes more coarsely, but rather delicately reticulate, giving a fine rugose appearance; immediately above the mouth and below the antennal sockets a small angular area lacks setigerous punctae, but with microsculpture; head viewed from side slightly transverse, gena smooth, polished; scape slender, as long as the funicular segments combined; pedicel about 2 times as long as thick; first funicular segment shortest, a little shorter than scape, 0.50 of second segment; segments 3-5 very slightly decreasing in length and gradually becoming thicker, fifth segment fully 2 times as thick as the first; club with 2 segments, slightly thicker than the preceding segment and also a little longer than the preceding 2 funicular segments combined; except for the apical 0.33 of scutellum, thorax delicately reticulate; apical 0.33 of scutellum with raised reticulations to give the appearance of close, circular, shallow punctae; vein *m* a little over 0.50 of vein *sm;* vein *pm* reaching towards wing apex, but not as long as vein *st;* marginal fringe on basal 0.50 of fore wing longer than elsewhere; fore wing subhyaline, with some brownish infuscation basally; propodeum subquadrate.

Abdomen almost as long as thorax, but narrower; with a small tuft of white setae at base on either side of petiole; first tergite more than 0.35 of dorsum; ovipositor slightly exserted.

Male : Length 0.80-1.00 mm. Head and thorax as in female; first abdominal tergite smooth, dark brown, about 0.50 of dorsum; other tergites metallic blue-green, with conspicuous long setae; second tergite with a transverse row of setae incomplete in the middle; scape

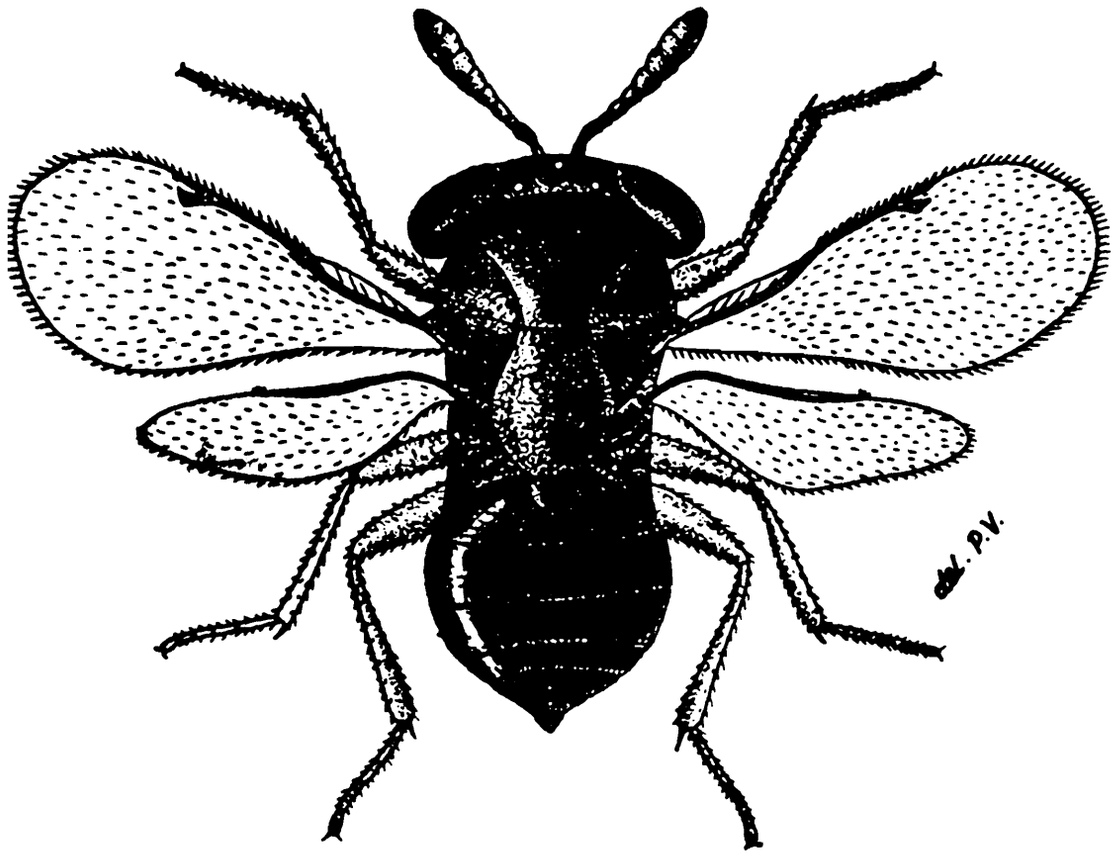

FIG.136. *Cephaleta brunniventris* Motschulsky, female.

and pedicel shiny black; flagellum brown, but appearing fuscous because of the dense black corneous sensoria; coxae concolorous with body; femora and tibiae with some brown and more or less suffused with dark metallic reflections; tarsi yellowish-brown; terminal tarsal segments fuscous.

Type locality : Ceylon

Distribution : Philippines, Formosa, India, Ceylon, America, China.

Hosts : Saissetia oleae, Saissetia nigra and other coccids.

Cephaleta tripathii (Kaul)

(Fig. 137)

1974 *Anysis tripathii,* Kaul, *Orient. Ins.,* 8 (2) : 187.

1978 *Cephaleta tripathii,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 439.

Female : Length 2.00 mm. Body black with bluish-green reflections, antenna brownish-black, all femora black with blue reflections, tibiae and tarsi brownish-black, wing hyaline, veins brown.

Head viewed in front broadly triangular, width to length 100 : 70; ocellocular space equal to ocellar diameter, interocellar space 5 times ocellar diameter, front ocellar space about 3 times ocellar diameter; antennae inserted close to clypeus, scrobe not reaching front ocellus; viewed from above width to length 100 : 30, vertex margined behind; viewed from side height to thickness 100 : 50, eye almost circular, gena equal to 1.50 times eye; antenna with 9 segments, 1.1.5.2; scape long and slender, 7 times longer than thick; pedicel about 0.30 of scape, thicker apically than basally; first funicular segment 0.40 of pedicel, second segment 2.40 times first, segments 2-4 subequal but gradually becoming thicker apically; club with 2 segments, subequal to preceding 2.50 segments combined.

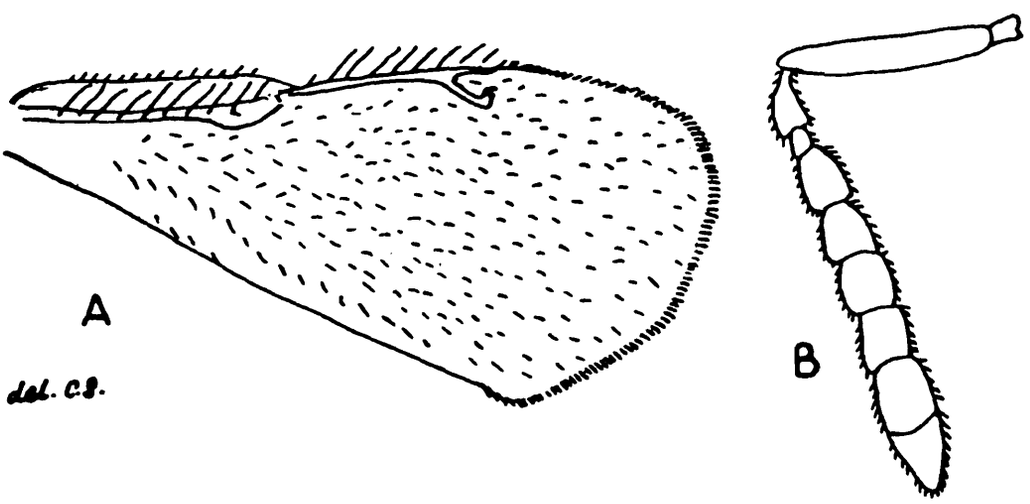

FIG. 137. *Cephaleta tripathii* (Kaul), female : A. Fore wing; B. Antenna.

Thorax narrower than head; finely punctate, parapsidal furrows complete; pronotum : mesonotum : scutellum ratio 25 : 100 : 125, pronotum narrow, mesonotum 2.75 times wider than long, scutellum 1.60 times wider than long, produced posteriorly conspicuously over the propodeum ; propodeum smooth with faint median carina and well developed lateral carina; fore wing length to width 100 : 45, veins *sm* : *m* : *pm* : *st* ratio 200 : 100 : 33 : 33; *sm* with 13 long bristles, abruptly swollen before apex; femur 3.40 times longer than thick; tibia 0.80 of femur and about 5 times longer than thick; tarsus a little longer than tibia, metatarsus 0.36 of tarsus, second tarsal segment about 0.50 of metatarsus, third segment 0.80 of second, fourth segment 0.80 of third, fifth longer, about 2 times the fourth; middle femur equal to fore femur but a little thinner; tibia a little longer than femur and about 8 times longer than thick, tibial spur long, 0.70 of the metatarsus; tarsus a little shorter than tibia, metatarsus a little over 0.60 of tarsus, second to fifth tarsal segments almost equal, each 0.40 of metatarsus; hind femur about 0.90 of middle femur; tibia about 1.20 times the femur, tibial spur 0.35 of metatarsus; tarsus almost equal to tibia, metatarsus about 0.40 of

tarsus, second tarsal segment 0.60 of metatarsus, third 0.50 of second; segments 4-5 subequal, each a little longer than third; abdomen smooth and shiny, dorsally somewhat depressed, a little over 0.50 of body, second tergite shortest, third a little longer; tergites 2-6 subequal; ovipositor slightly exserted.

Type locality : Calcutta

This species differs from *C. brunneiventris* Motschulsky in colour, size, proportions of antennal segments and wing.

SUBFAMILY PTEROMALINAE

1897 *Pteromalinae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 236.
1900 *Pteromalinae,* Ashmead, *Proc. US Nat. Mus.,* 23 : 248.
1904 *Pteromalinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 312.
1909 *Pteromalini,* Schmiedeknecht, *Gen. Ins.,* 97 : 308.
1938 *Pteromalinae,* Mani, *Cat. Indian Ins.,* 23 : 101.
1969 *Pteromalinae,* Graham, *Bull Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 27, 32, 33, 34, 35, 352.
1979 *Pteromalinae,* Krombein *et al.,* Hymen. N. America, 1 : 794.

Parapsidal furrows generally incomplete; hind tibial spur single; spiracular sulci and plica lateralis (lateral folds) of propodeum present; median longitudinal carina more or less distinct on propodeum; head not exceptionally wide; antennae with 12-13 segments; scutellum not exceptionally large; abdomen usually sessile or nearly so.

KEY TO TRIBES

1.	Both mandibles 3-dentate	*Metaponini*
	Right mandible, sometimes also left, 4-dentate	2
2.	Both mandibles 4-dentate	*Pteromalini*
	Right mandible 4-dentate, left mandible 3-dentate	3
3.	Antennae inserted on or near the middle of face, always above lower orbital border	*Raphitelini*
	Antennae inserted far below the middle of face, on or below lower orbital border	*Eutelini*

Tribe METAPONINI

1904 *Metaponini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 313.
1909 *Metaponina,* Schmiedeknecht, *Gen. Ins.,* 97 : 309.

The genera included : *Stinoplus* Thomson, *Eutroxys* Westwood, *Holcaeus* Thomson, *Cricelius* Thomson, *Chrysoglyphe* Ashmead, *Dirhincus* Thomson, *Acanthometapon* Ashmead, *Spintherus* Thomson, *Dinarmus* Thomson, *Metapon* Walker, *Psilocera* Walker, *Lophocomodia* Ashmead.

KEY TO GENERA

1 Petiole exceptionally long; abdomen compressed	*Asoka* Boucek
Petiole not exceptionally long .	2
2. Posterolateral angles of propodeum acutely angled; parapsidal furrows nearly complete; antennae with 6 funicular segments and 2 annelli	*Chlorocytus* Graham
Posterolateral angles of propodeum rounded	3
3. Costal cell of fore wing narrow; clypeus shallowly emarginate in front; fore wing with *m* at least slightly longer than *st*, stigma small	*Dinarmus* Thomson
Costal cell of fore wing exceptionally wide; clypeus bidentate; fore wing vein *m* distinctly shorter than *st;* stigma large	*Oedaule* Waterston

Asoka Boucek

1974 *Asoka,* Boucek, *Bull. Brit. Mus.* (Ent.), 7 (4) : 557.

Head : occiput not margined; temples terete, strongly receding, short; vertex feebly convex, ocelli in curved line; eyes bare, oval; frons convex, inner orbital borders subparallel above, considerably diverging in lower 0.50; scrobes moderately deep, narrow, with steep but terete sides; lower face feebly convex; clypeus with radiating striation, not well delimited, lower margin with deep incision; gena convex, posterior margin not carinate; antennae inserted above middle of face, subfiliform, in female with segments 13 : 1.1.3.5.3; pedicel short, annelli short, funicular segments long, each with several irregular rows of small longitudinal sensilla; club elongate, not sharply pointed, its first segment long, apical 2 segments very short.

Thorax short, densely pubescent, deeply reticulate with some cross-rugulae; pronotum strongly transverse, slightly narrower than mesonotum; collar narrowed medially, convex, anteriorly delimited by a fine carina, posterior margin without smooth strip; parapsidal furrows shallow, posteriorly indistinct; scutellum not subdivided; propodeum in the middle invisible owing to unusual nuchal part thrust upwards and forwards to or even above apex of scutellum, surface of propodeum reticulate; prepectus triangular, of medium size; mesopleura, lateral mesepisternum reticulate, depressed, flat; lower epimeron reticulate, separated from the smooth upper epimeron by subvertical deep depression; triangular metapleura not reaching base of hind wing; fore wing with vein *m* slender, long, slightly longer than *pm*; vein *st* hardly knobbed, less than 0.33 of vein *m*; speculum developed, open below; basal cell with pilose cubital and basal folds and scattered discal hairs; hind coxa dorsally bare; hind tibial spurs double, outer spur small.

Petiole narrow, long, slightly expanding posteriorly, nearly smooth; abdomen in female compressed, tapering to apex; very long,

second tergite short, following tergites longer; epipygium very narrow, with small cerci near apex, cercal setae short; ovipositor slightly protruding.

Type-species : Asoka appendigaster Boucek

Asoka petiolatus Boucek

1974 *Asoka petiolatus,* Boucek, *Bull. Brit. Mus.* (Ent.), 7 (4) : 560.

1978 *Asoka petiolatus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.*, 12 (4) : 437.

Female : Length 6.20-7.30 mm. Body dark bluish or greenish; mesoscutum mainly black; abdomen laterally slightly blue or green, dorso-apically purplish-black; antennae brown to black, scape and pedicel testaceous; coxae and femora with metallic tinge, tibiae and tarsi testaceous, tibiae slightly infuscate in basal 0.50; wings subhyaline.

Head in front 1.26-1.28 times as broad as high; front ocellar space greater than ocellar diameter; postocular space 1.90-2.00 times ocellocular space; height of head 41, width of frons 30.5, eye 24 : 19, malar space 13, width of mouth 23, length of scape 19, flagellum 74, 1.45 times as long as breadth of head; club with first segment short, both sutures slightly oblique.

Thorax about 1.05 times as long as wide, collar medially slightly more than 0.33 of mesonotum, moderately swollen at hind margin, anterior carina distinct; sculpture of collar and mesonotum rather coarse, reticulate with raised transverse rugulae; scutellum trapeziform, transverse, apex partly hidden under overlapping nuchal region of propodeum; fore wing with veins *sm : m : pm : st* ratio 57 : 31 : 28 : 8.5; vein *st* with very weak knob; plicae vague, only anteriorly indicated; part of propodeum above them finely reticulate, part below and behind them with very coarse deep reticulation, becoming finer towards median depression of posterior wall; subpetiolar area not well delimited, reduced to a transverse lozenge-like area between hind coxae far below petiolar foramen, with fine reticulation between some transverse rugae; propodeum at sides and posteriorly with sparse long thin white hairs.

Petiole slightly longer than distance between anterior margin of pronotum and apex of scutellum mostly smooth except for fine longitudinal striation at base, slightly widening cauded; relative width anteriorly 5, posteriorly 9, length 45 (including condyle-like base); tergites, except for basal ones dorsally, microscopically transversely reticulate, tergites from middle of fifth with short, dark depressed pubescence.

Male : Unknown

Type locality : Ceylon : Kandy

Distribution : West Malaysia : Kuala Lumpur; India.

Host : Unknown

Chlorocytus Graham

1956 *Chlorocytus,* Graham, *Ent. mon. Mag.,* 92 : 92.
1964 *Chlorocytus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 58.
1965 *Chlorocytus,* Graham & Claridge, *Trans. Roy. ent. Soc. London,* 117 : 264.
1969 *Chlorocytus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 611.

Vertex without transverse ridge; propodeum in the middle a little longer than 0.50 of scutellum; mandible with 4 teeth on the right and 3 teeth on the left; body generally bright metallic-green or blue; spiracular sulci shallow, without costa; vein *m* at the most 2 times *st;* mesoscutum without setigerous punctae; usually both mandibles with 3 teeth; pronotal collar faintly margined the whole length; antennae inserted distinctly above the level of lower orbital borders; petiole short.

Type-species : Chlorocytus pulchripes Walker

Chlorocytus murriensis Graham

1965 *Chlorocytus murriensis,* Graham, *Trans. Roy. ent. Soc. London,* 117 : 298.
1969 *Chlorocytus murriensis,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 621.
1978 *Chlorocytus murriensis,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 440.

This species is not known to me; the original description is also not available.

Type locality : Pakistan

Host : Parasitic on some insects on herbaceous vegetation.

Chlorocytus xanthopus (Cameron)

1906 *Etroxys xanthopus,* Cameron, *J. Bombay nat. Hist. Soc.,* 17 : 97.
1938 *Etroxys xanthopus,* Mani, *Cat. Indian Ins.,* 23 : 102.
1978 *Chlorocytus xanthopus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 440.

Female : Length 3.00 mm. "Green variegated with brassy and blue tints, metanotum indigo blue; the abdomen of a brighter colour than the thorax; the antennal scape dark fulvous; the flagellum fuscous; legs pale straw yellow; the anterior coxae, except at the apex, dark golden; wings clear hyaline, iridescent, the nervures pale testaceous.

Head closely, distinctly punctured, the front and vertex slightly more strongly than the face; the clypeus indistinctly separated from the face, closely, longitudinally, slightly obliquely striated. Palpi yellow. Pro- and mesothorax with scutellum punctured like the head; the metanotum is much more obscurely punctured; there is a keel down the middle; at the base laterally is a distinct fovea, the obscure

punctuation is intermixed with fine striae. On the centre of the metapleurae is a deep, wide longitudinal furrow, which is narrowed at the base. Abdomen as long as the head and thorax united, smooth and shining, gradually narrowed to a fine point at the apex.

The antennae are more slender and the parapsidal furrows less distinct than they are in the British species of *Etroxys*. I have used the original spelling of this word as used by Ashmead in his "Classification of the Chalcid Flies." It has been spelled *Aetroxys* and *Hetroxys*."

Type locality : Quetta (Pakistan)

Chlorocytus magrinicollis (Cameron)

1906 *Etroxys (?) marginicollis,* Cameron, *J. Bombay nat. Hist.,* 17 : 97.

Male : Length 3.00 mm. "Dark coppery green, the abdomen of a brighter green colour, largely tinged with coppery patches; the antennal scape and base of mandibles rufo-testaceous; the flagellum fusco-testaceous, darker above; the legs dark green, the coppery tints; the apex of femora, the tibiae and tarsi pale straw yellow; wings clear hyaline, the nervures pale yellow.

Head closely, finely, distinctly, but not deeply punctured; the clypeus not separated from the face, closely, regularly, distinctly striated. Thorax punctured like the head, the punctures running into reticulations, especially on the mesonotum; the sides of the metanotum are smooth, shining and bright green; its centre is somewhat more strongly punctured than the scutellum. Pleurae darker coloured than the scutellum; the apex of the pro- and meso-pleurae smooth and shining; the rest closely punctured reticulated. Abdomen not quite so long as the head and thorax united; the apical half is gradually narrowed towards the apex, and is covered with a white pubescence.

Apart from the difference in the colouration of the legs this species may be known from *E. xanthopus* by the shorter and broader abdomen and by the much more strongly and regularly punctured-reticulated metanotum. The abdomen is shorter and broader than it is in typical *Etroxys;* and it may not really belong to that genus. The mandibles are 3 dentate; the apical tooth is larger and more clearly separated than the other two. The antennal scape is shorter, is not extending to the hinder ocelli as in *xanthopus;* the hinder ocelli are separated from each other by a slightly greater distance than they are from the eyes. The head is wider than the thorax. The pronotum is transverse and margined at the base, not broadly rounded, and narrowed laterally as in *xanthopus*, which has a larger prothorax. In the fore wing, the stigmal branch is nearly as long as the ulna. The apical 3 joints of the antennae are thickened."

Type locality : Quetta (Pakistan)

Dinarmus Thomson

1878 *Dimachus* subg. *Dinarmus,* Thomson, *Hymen. Scand.,* 5 : 50, 56.
1904 *Bruchobius,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 314-315.
1904 *Dinarmus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 276.
1909 *Dinarmus,* Schmiedeknecht, *Gen. Ins.,* 97 : 288.
1909 *Bruchobius,* Schmiedeknecht, *Gen. Ins.,* 97 : 288, 310, 311, 314.
1924 *Sphaerakis,* Masi, *Ann. Genova Mus. Civ. Stor. Nat.,* 51 : 156.
1956 *Dinarmus,* Delucchi, *Z. angew. Ent.,* 39 : 240.
1957 *Dinarmus,* Ferriére & Delucchi, *Entomophaga,* 2 : 121.
1964 *Dinarmus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 40.
1969 *Dinarmus,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 434.
1979 *Dinarmus,* Krombein *et al.,* Hymen. N. America, 1 : 802.

Body slender generally dark coloured; head large, not prominent behind eyes; scrobes little developed, antennae inserted in the middle of face with 13 segments : 1.1.3.5.3; scape reaching front ocellus; pedicel triangular, funicular segments small, last segment transverse; club stout, obtuse; clypeus in the middle shallowly emarginate, without tooth; gena distinctly long bulging; thorax stout, convex, pronotum as wide as mesonotum; collar broad; fore coxae with acute margin; scutellum convex; propodeum short, finely punctate, without median longitudinal carinae, spiracle large, sublinear; nucha long, projecting beyond base of hind coxae; hind tibial spurs usually double; fore wing hyaline with large speculum; costal cell wide; vein *m* about 1.50 times *st;* legs stout, abdomen oval.

Type-species : Dinarmus acutus Thomson

KEY TO SPECIES

1. Fore wing with vein *pm* longer than *m* and *st*	2
Fore wing with vein *pm* either equal to or shorter than *st*	3
2. Clypeus truncate; stigma large	*Dinarmus maculatus* (Masi)
Clypeus dentate; stigma small	*Dinarmus laticeps* (Ashmead)
3. Vein *pm* equal to *m*, longer than *st*	*Dinarmus robustus* (Walker)
Vein *pm* shorter than *m*	4
4. Vein *pm* subequal to *st;* both mandibles with 4 teeth	*Dinrmus vagabundus* (Timberlake)
Vein *pm* longer than *st*	5
5. Third annellus a little wider than long; about 1.50 times the second	*Dinarmus sauteri* Masi
Third annellus transverse	*Dinarmus colemani* (Crawford)

Dinarmus maculatus (Masi)

1924 *Sphaerakis maculata,* Masi, *Ann. Mus. Civ. Stor. Nat. Giacomo Doria,* 50 : 157-158.
1939 *Bruchobius maculatus,* Mani, *Indian J. Ent.,* 1 : 76.
1978 *Dinarmus maculatus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 442.

Female : Length 3.00 mm. Head and thorax pale olive-coloured; dorsally with pale red and green reflections; abdomen metallic; tergites one and 5 aeneous, tergite 4 behind obscurely green; antennae ochraceous-yellow; annelli, funicular segments and club brown; femora brown; tibiae basally and apical 0.30 white.

Thorax width to length ratio 4 : 5; propodeum and nucha smooth, with quadrate areola; fore wing veins *m* : *st* ratio 100 : 70; vein *m* with 11-12 bristles, *pm* with about 15 setae, a little longer than *m;* abdomen equal to mesonotum.

Male : Unknown.

Type locality : Burma

Distribution : Burma; India

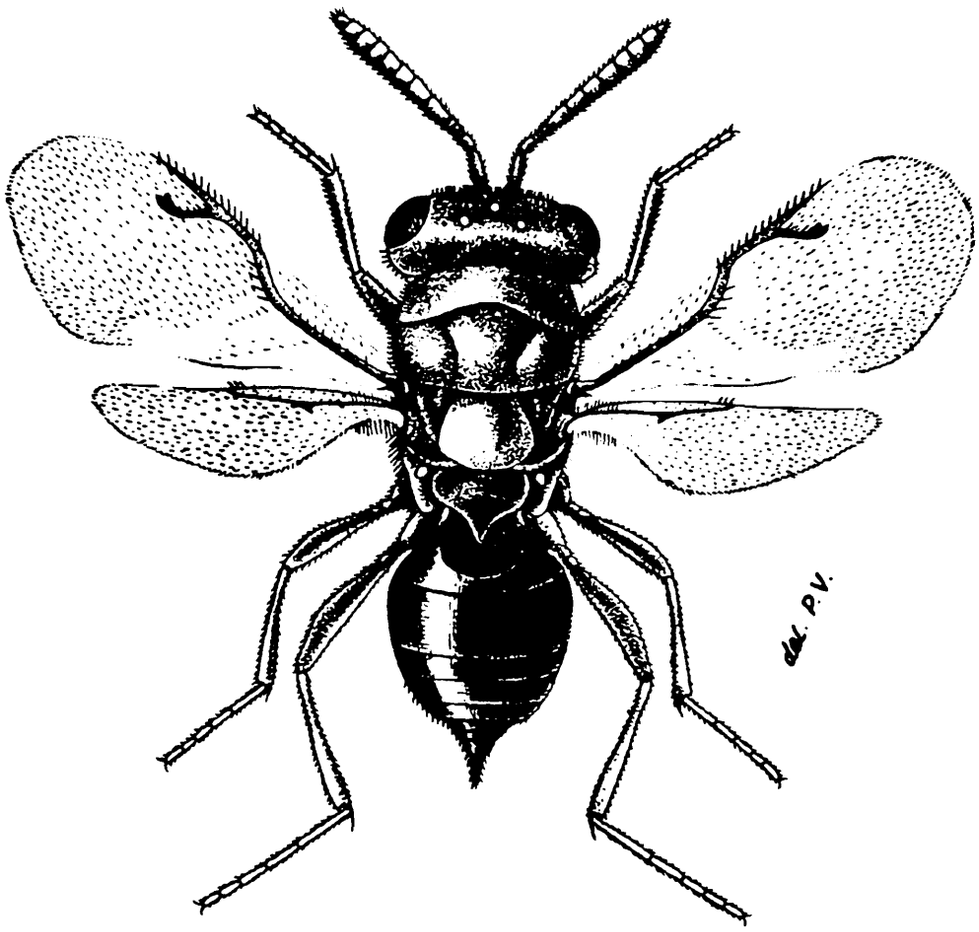

FIG. 138. *Dinarmus laticeps* (Ashmead), female.

Dinarmus laticeps (Ashmead)

(Fig. 138 & 139)

1904 *Bruchobius laticeps,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 313.

1921 *Dinarmus laticeps,* Waterston, *Grain Pests Com. Roy. Soc.,* 9 : 14-16.

1939 *Bruchobius laticeps,* Mani, *Indian J. Ent.,* 1 (1) : 69-99.

1940 *Bruchobius laticeps,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 10.
1956 *Dinarmus laticeps,* Delucchi, *Z. angew. Ent., angew. Ent.,* 39 : 243-246.
1979 *Dinarmus laticeps,* Krombein *et al.,* Hymen. N. America, 1 : 803.

Female : Length 2.50 mm. Body green with brassy reflections, head wider than thorax; head and thorax umbilicately punctate; mesonotum coarsely umbilicately punctate; antennae with 13 segments including 3 annelli; first funicular segment 2 times pedicel, the following segments subequal; second funicular segment about 0.60 of first; pronotum truncate in front; propodeum umbilicately punctate, with lateral sulci; vein *m* 0.30 of *sm, pm* a little longer than *m, st* subequal to *m*.

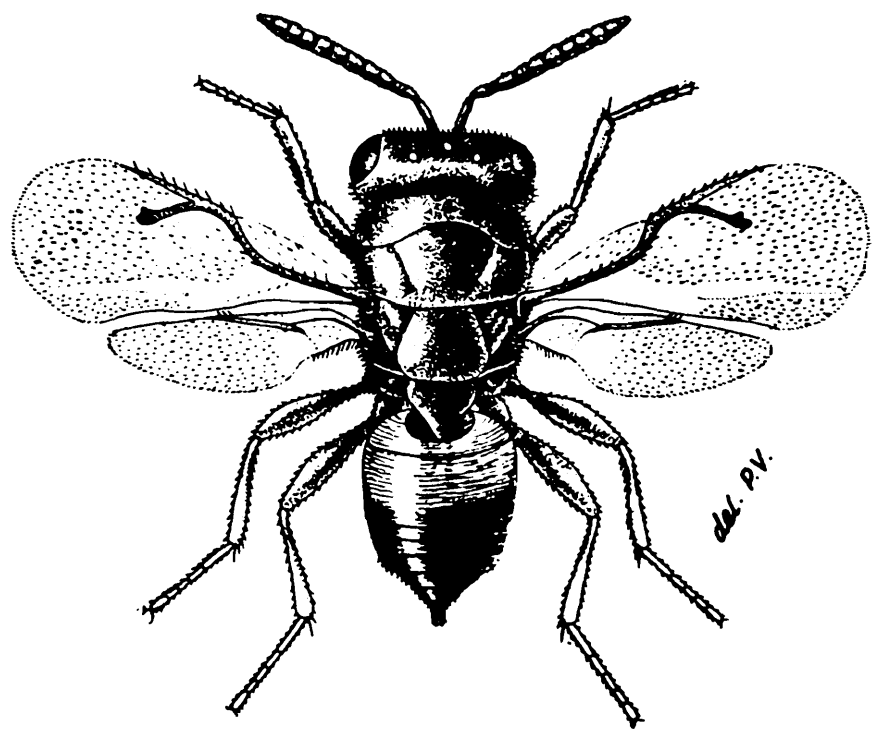

FIG. 139. *Dinarmus laticeps* (Ashmead), male.

Male : Length 1.75 mm. Annelli 2, third annellus elongate subequal to pedicel; abdomen with a white spot at base.

Type locality : Washington D.C.

Distribution : Cosmopolitan

Host : Acanthoscelides obtectus (Say), *Bruchus pisorum* (Linn.), *Callosobruchus maculatus* (F.)

Dinarmus robustus (Walker)

1847 *Pteromalus robustus,* Walker, *Ann. Mag. nat. Hist.,* 19 : 230.
1878 *Dimachus (Dinarmus) acutus,* Thomson, *Hym. Scand.,* 5 : 56.
1924 *Sphaerakis mayri,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 51 : 157.
1939 *Bruchobius mayri,* Mani, *Indian J. Ent.,* 1 : 76.
1953 *Dinarmus acutus,* Domenichini, *Bull. Zool. Agric. di Bach.,* 19 : 218.
1956 *Dinarmus acutus,* Delucchi, *Z. angew. Ent.,* 39 : 243.
1962 *Dinarmus acutus,* Delucchi, *Awamia,* 2 : 123.
1969 *Dinarmus acutus,* Graham, *Bull. Brit. Mus.* (Ent) Suppl., 16 : 434-435.
1979 *Dinarmus acutus,* Krombein *et al.,* Hymen. N. America, 1 : 802.

The following is Walker's description of the species : This species is near *D. latus* : "It is longer and has longer and paler antennae. Body aeneous, broad and thick; head and thorax closely punctured; head large, broader than thorax; antennae tawny, subclavate, rather slender, as long as the thorax; tip of each joint piceous; first joint linear, long and slender; second cup-shaped; third and fourth very minute; fifth much longer; sixth and following to the tenth successively but very slightly decreasing in length; club conical, much longer than the tenth joint; thorax nearly obconical; prothorax short, slightly concave behind; sutures of the parapsides distinct; propodeon large, transverse, not furrowed; podeon very short; abdomen smooth, shining, broader than long, truncated towards the lip, rather narrower than the thorax, and less than half its length; metapodeon large; octoon and following segments very short; legs pale tawny, rather stout; hind thighs except their tips piceous; tarsi and tips of tibiae of middle and hind legs pale straw-colour; wings limpid, of moderate size; squamulae piceous; nervures brown; ulna hardly half the length of the humerus; radius as long as the ulna; arbitus much shorter than the radius; stigma small."

Length of the body 1¼ line; of the wings 2¼ lines.

Type locality : Europe

Distribution : Europe, India

Host : Bruchid eggs-larvae

Dinarmus vagabundus (Timberlake)

1926 *Bruchobius vagabundus,* Timberlake, *Proc. Hawaii. ent. Soc.,* 6 : 305-307.
1939 *Bruchobius vagabundus,* Mani, *Indian J. Ent.,* 1 (1) : 69-88.
1978 *Dinarmus vagabundus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 442.

Female : Length 1.77-2.63 mm. Head and thorax black, not metallic, front surface of head with dark greenish-blue lusture, propodeum and abdomen shiny with a brassy lusture, scape and pedicel brownish-yellow; flagellum brown; except coxae, legs yellowish-brown; basal 0.50 of tarsi and tip of tibiae white.

Body finely reticulately punctae; head wider than thorax; vertex 0.60 as wide as head; ocellocular space equal to interocellar space; scrobe reaching front ocellus; antennae inserted a little above lower orbital border, scape cylindrical; pedicel equal to the first funicular segment; first annellus small; second 2 times the first; third large, as long as wide; funicular segments becoming gradually thicker; first funicular segment 2 times as long as thick; first club segment a little longer than the preceding segment and about 0.25 longer the following segments; mandible with 4 teeth; scutellum a little wider than long; neck of propodeum short; abdomen broadly ovate, equal to thorax; vein *m* a little less than 0.50 of *sm; st* equal to *pm*; and about 0.75 of *m*.

Male : Length 0.16-0.87 mm. Head a little larger than in female, abdomen shorter than in female, mesonotum more coarsely reticulate than in female, abdomen testaceous-yellow, in the basal 0.50; scape yellowish-white in the basal 0.50, rest of antennae brownish-yellow.

Type locality : Hawaii

Distribution : Pakistan : Karachi; India : Punjab, Karnataka, Tamil Nadu; Ceylon : Peradeniya

Host : Bruchids

Dinarmus sauteri Masi

1926 *Dinarmus sauteri,* Masi, *Konowia,* 5 : 360.
1939 *Dinarmus sauteri,* Mani, *Indian J. agric. Sci.,* 9 (4) : 624-625.

Female : Length 4.50-5.00 mm. Body aeneous-green; abdomen above deep violet, except the brassy-green first tergite; eyes chestnut coloured; antennae reddish-yellow; funicular segments 4-5 and sometimes also 6 darker; club dark; legs brown, tarsi ochraceous, knees, tips of middle tibiae, apical 0.33 of hind tibiae white or pale yellow; wings subhyaline.

Head shorter than long; margin of clypeus deeply incised in the middle; gena sulcus faint; orbits elliptical; vertex obtusely angulated and rounded; antennae inserted above level of lower orbital border; scape reaching beyond ocellus; pedicel hardly as long as 3 annelli combined; third annellus 1.50 times longer than the preceding one and a little wider; first funicular segment 3 times longer than thick and 2 times pedicel; following segments becoming gradually shorter and thicker, fifth segment a little longer than 0.50 of first, 1.50 times longer than thick; club equal to the first segment and the third annellus combined; fore wing well rounded apically, veins *sm* : *m* : *pm* : *st* ratio 100 : 51 : 36 : 20; vein *st* somewhat clavate, basal cell naked; remaining space densely covered with setae; of these at least 30 between *st* and *pm* 4 or 5 in each transverse series; dorsellum with the usual 2 pits at extremities; propodeum not carinate medially; densely punctate with the posterior part distinctly bordered near the

petiolar articulation; spiracle 2 times longer than broad, separated from the median area of propodeum with 2 superposed pits, the lower of which is more visible and deeper; 'mesepimerum' shiny, with microscopic reticulation; abdomen not longer than the rest of body, as wide as thorax, very minutely reticulate.

Male : Length 2.40 mm. Body bright metallic-green; excepting the apical 0.33 of first, the whole of the second and the base of the third tergites which are white, rest of abdomen very dark violet or dark coppery-brown; scape and pedicel light brown, rest of antennae dark brown; coxae concolorous with thorax; fore and mid femora reddish-brown; hind femora coppery-brown; basal 0.50 of tibiae light brown, all knees, apical halves of tibiae, tarsi except apical segment almost white; veins relatively lighter than in the female; antennae inserted well above the middle of face, annelli 2, pedicel nearly equal to the first funicular segment; propodeum with a distinct median carina sculptured like the rest of thorax.

Type locality : Formosa

Distribution : Formosa; India

Host : Lixus truncatulus

Dinarmus colemani (Crawford)

1913 *Bruchobius colemani,* Crawford, *Proc. US nat. Mus., 45 : 250.*
1919 *Bruchobius colemani,* Gahan, *Proc. US nat. Mus.,* 56 : 523.
1924 *Sphaerakis colemani,* Masi, *Ann. Mus. Civ. Stor. Genova,* 51 : 157.
1938 *Sphaerakis colemani,* Mani, *Cat. Indian Ins.,* 23 : 77.
1978 *Dinarmus colemani,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 442.

Female : Length 2.50 mm. Similar in colour to *D. laticeps* (Ashmead), but third annellus transverse; vein *m* more than 0.50 of *sm; pm : m* ratio 12 : 17; *st : pm* ratio 8 : 12.

Male : Length 2.00 mm. Annelli 2; scape and pedicel reddish-brown, funicle paler, club darker; first funicular segment subequal to 2.

Type locality : Bangalore

Distribution : Delhi, Bihar : Dholi; Bangladesh : Dacca

Host : Callosobruchus chinesis

Dinarmus basalis (Rondani)

1877 *Entedon basalis,* Rondani, *Boll. Soc. ent. Ital.,* 9 : 174.
1978 *Dinarmus basalis,* Boucek, Subba Rao & Farooqi, *Orient Ins.,* 12 (4) : 442.

"Nigro-aenescens. Antennae scapo refescence, flagello nigricante, sub-nodu. Alae limpidae, vena subcostali disincte ciliata. Abdomen parte basali magis well minus late flavescente et sub-

translucide. Pedes pallide rufesantes, femoribus late nigri-cantibus, et tibias praesertum posticis frequenter obscurie fuscis ad basim up tarsorum omnimum apex."

Type locality : "Europe"

Distribution : Pakistan; Karachi; India : Rajasthan, Bihar, Andhra Pradesh, Bangalore.

Host : Bruchids, *Trogoderma granarium* in stored grain.

Oedaule Waterston

1922 *Oedaule,* Waterston, *Indian forest Rec.,* 9 : 81.
1924 *Oedaule,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 51 : 149-160.
1938 *Oedaule,* Mani, *Cat. Indian Ins.,* 23 : 78.
1956 *Oedaule,* Delucchi, *Z. angew. Ent.,* 39 : 238.
1964 *Oedaule,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 45.
1969 *Oedaule,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 435.

Clypeus deeply emarginate in front, bidentate; *st* rather large; costal cell wide, 5 times as long as wide; propodeal nucha large, subglobose, strongly reticulate, projecting well beyond base of hind coxae; speculum moderately large; pronotum as wide as mesoscutum; descending in front of collar vertically to short neck; gena without a hollow near mandibular base; antennae inserted a little below level of lower orbital borders; hind coxae bare above basally; occiput not margined; ocellar triangle flattened; parapsidal furrows faint; postero-lateral angles of propodeum rounded; hind tibial spur double; vein *pm* distinctly longer than *st;* antennal segments 1.1.2.6.3; funicular segments short; gena not extending below clypeal margin; vein *m* not greatly thickened, slightly shorter than *st.*

Type-species : Oedaule stringifrons Waterston

Oedaule stringifrons Waterston

(Fig. 140)

1922 *Oedaule stringifrons,* Waterston, *Indian forest Rec.,* 9 : 32.
1978 *Oedaule stringifrons,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 448.

Female : Length 4.50 mm. Head and thorax dark aeneous with greenish or coppery metallic reflections; abdomen blackish-brown, faintly metallic posteriorly, with a large clear yellow spot basally extending backwards; wings slightly yellow tinted, veins darker, funicle blackish-brown, with paler scape, pedicel and annelli, mid and hind trochanters, femora, and tibiae brown, tibiae being paler apically.

Head in front broader than long; eye 0.50 of head; frons wide; sculpture strong on the genae behind the thin impressed malar keel,

round the orbits, behind the antennae, and on vertex, fine and regular, coarser and irregular on face; below toruli surface furrowed coarsely in the middle and more finely towards the sides, furrows converging towards the clypeal edge.

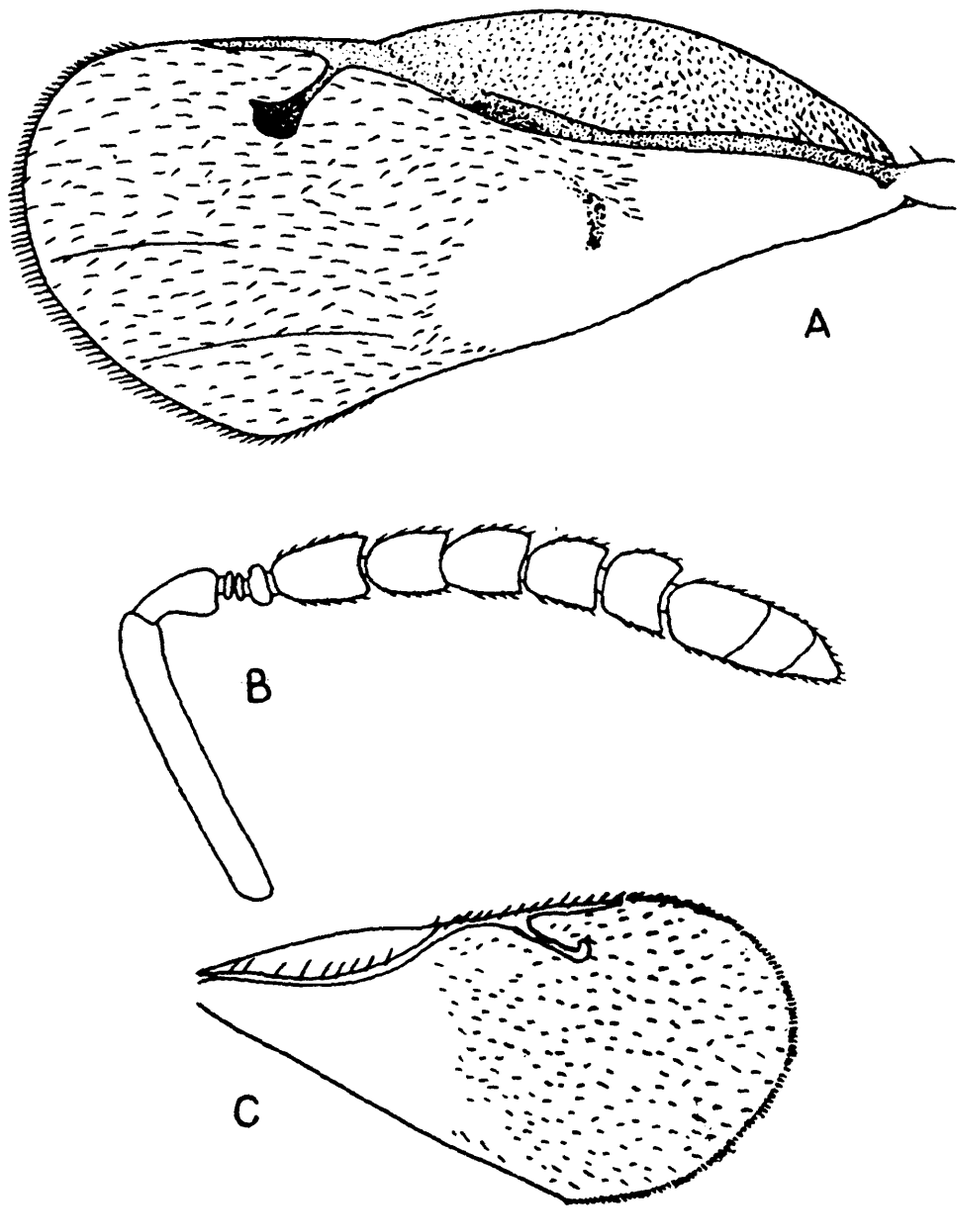

FIG. 140. A. *Oedaule stringifrons* Waterston, male, fore wing; B-C. *Lariophagus distinguendus* (Förster), female : B. Antenna; C. Fore wing.

Thorax reticulate, a little coarser than on vertex; metapleura divided into 2 nearly equal areas by a row of larger punctures which does not quite reach the suture between the epimeron and the metapleuron; propodeum like rest of thorax but a little finer, behind spiracle deeply excavated, a well defined pre-spiracular sulcus

widening outwards along the outer anterior edge of the segment; numerous short white hairs outside the spiracle; fore wing 2.20 times as long as broad, hind margin shortly concave near the base where the wing contracts abruptly; vein *sm* and *m*, showing (a) a more slender basal portion (entirely *sm*), (b) the swollen splice of *m-sm* and (c) a short piece of the *m; st* and *pm* equal; submarginal cell broad spindle-shaped, the costa bulging anteriorly and the neuration curving back posteriorly, evenly and densely set below with numerous minute bristles, bare superiorly; about 24 short, stiff, single bristles on the submarginal to the end of the distal swelling beyond which, and along the costa, the marginal bears many short black bristles 3-4 deep.

Abdomen shorter than thorax, smooth, shining, with faint transverse pattern indicated chiefly posteriorly; first segment occupying about 0.33.

Type locality : Dehra Dun.

Distribution : Dehra Dun, Ludhiana (Punjab), Delhi, North Salem and Jawalagiri (Tamil Nadu); Pakistan: Karrat, Karachi

Host : Ex pods of *Pueraria tuberosa,* ex bruchid on *Sesbania aculeata*

Tribe Pteromalini

1904 *Pteromalini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 318.
1909 *Pteromalina,* Schmiedeknecht, *Gen. Ins.,* 97 : 327.
1938 *Pteromalariæ,* Mani, *Cat. Indian Ins.,* 23 : 102.
1979 *Pteromalini,* Krombein *et al.,* Hymen. N. America, 1 : 798.

Genera included : *Beloneura* Ashmead, *Trichomalus* Thomson, *Isocyrtus* Walker, *Urolepis* Walker, *Epipteromalus* Ashmead, *Paphgus* Walker, *Meraporus* Walker, *Endomychobius* Ashmead, *Pteromalus* Swed., *Hypopteromalus* Ashmead, *Pseudocatolaccus* Masi, *Catolaccus* Thomson, *Norbanus* Walker, *Neocatolaccus* Ashmead, *Metopachia* Westwood, *Parapteromalus* Ashmead, *Diglochis* Förster, *Dibrachys* Förster, *Arthrolytus* Thomson, *Spaniopus* Walker, *Metastenus* Walker, *Kranophorus* Graham etc.

Key to Genera

1. Vertex strongly acutely margined in the middle	2
Vertex usually not strongly margined in the middle	3
2. Eyes glabrous.	*Eupteromalus* Kurdjumov
3. Propodeal nucha large, rounded; vein *pm* distinctly longer than *st*.	4
Propodeal nucha small or absent; vein *pm* hardly longer than *st*.	11

4. Pedicel distinctly longer than the first funicular segment, rarely subequal; first funicular segment shortest; spiracles small. 5
   Pedicel shorter than first funicular segment; first funicular segment longest; spiracles usually large. .. 8
5. Propodeal carina present; antennae clavate; abdomen acute below. 6
   Propodeal carina absent; abdomen convex below. .. 7
6. Spiracles usually small. *Anisopteromalus* Ruschka
7. Spiracles large, elliptic; funicular segments transverse *Lariophagus* Crawford
   Spiracles small, rounded; vein *m* long; first tergite large. *Metastenus* Walker
8. Abdomen elongate. 9
   Abdomen not elongate. 10
9. First tergite 2 times the second; abdomen convex ventrally. .. *Pteromalus* Swederus
10. Spiracles large, oval; funicular segments longer than thick; abdomen keeled basally below. *Catolaccus* Thomson
    Spiracles small, round; funicular segments short; abdomen convex below. *Norbanus* Walker
    Propicroscytus Thoms.
11. Vein *pm* shorter than *st*. .. *Cyrtoptyx* Delucchi
    Vein *pm* longer than *st*. .. 12
12. Hind tibial spurs double. .. *Mokrzackia* Mokr.
    Hind tibial spurs single. 13
13. Wings without apical fringe. .. 14
14. Discal cilia of wing normal. .. *Dibrachys* Förster
    Discal cilia sparse in the middle; first funicular segment a little longer than second. *Schizonotus* Ratzeb.

Eupteromalus Kurdjumov

1878 *Pteromalus* (partim), Thomson, *Hymen. Skand.*, 5 : 155.
1904 *Trichomalus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 318.
1909 *Trichomalus*, Schmiedeknecht, *Gen. Ins.*, 97 : 327, 329, 331.
1913 *Trichomalopsis*, Crawford, *Proc. US nat. Mus.*, 45 : 251.
1913 *Eupteromalus*, Kurdjumov, *Rev. russe ent.*, 13 : 12.
1917 *Nemicromelus*, Girault, *Descrip. Hymen. Chalc.*, (Priv.), 5 : 4.
1921 *Eupteromalus*, Gahan, *Proc. ent. Soc. Washington*, 22 : 240.
1934 *Eupteromalus*, Gahan, *Misc. Pub. US Dept. Agric.*, 174 : 80.
1938 *Eupteromalus*, Mani, *Cat. Indian Ins.*, 23 : 103.
1952 *Eupteromalus*, Nikolskaya, *Chalcid. Fauna USSR*, 221.
1956 *Eupteromalus*, Graham, *Ent. mon. Mag.*, 92 : 254.
1963 *Eupteromalus*, Peck, *Canad. Ent.* (Suppl,), 13 : 683.
1964 *Eupteromalus*, Peck. at al., *Mem. ent. Soc. Canada*, 34 : 51.
1969 *Eupteromalus*, Graham, *Bull. Brit. Mus.*, (Ent.) Suppl., 16 : 737.
1979 *Eupteromalus*, Krombein *et al.*, Hymen. N. America, 1 : 820

Occipital foramen not margined; antennae inserted a little above level of lower orbital border, segments 13 : 1.1.2.6.3; scape normal; eyes not hairy; hind coxae without hairs above in basal part; fore wing with large speculum; carina between vertex and occiput behind lateral ocelli by more than ocellar diameter; propodeum with reticulate nucha, with median longitudinal carina and spiracular sulci; parapsidal furrows indicated only anteriorly; posterolateral angles of propodeum rounded; hind tibial spur single; clypeus emarginate in front; funicular segments 4-5 a little thicker than long; club in female subulate, antennae in male filiform; vein *pm* longer than *st*, vein *m* not thickened; abdomen ovate, second tergite more than 0.33 of abdomen.

Type-species : Eupteromalus nidulans (Thomson)

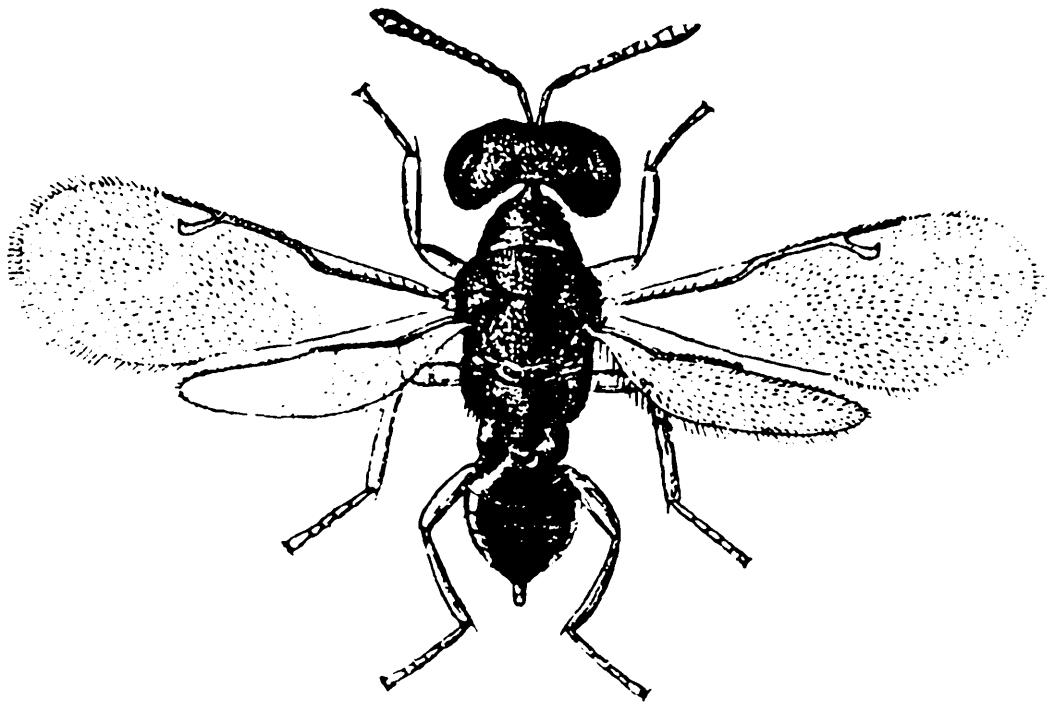

FIG. 141. *Eupteromalus parnarae* Gahan, male.

Eupteromalus parnarae Gahan

(Fig. 141)

1919 *Eupteromalus parnarae,* Gahan, *Proc. US nat. Mus.*, 56 : 522.

1938 *Eupteromalus parnarae,* Mani, *Cat. Indian Ins.*, 23 : 104.

1940 *Eupteromalus parnarae,* Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 19.

1978 *Eupteromalus parnarae,* Boucek, Subba Rao & Farooqi, *Orient. Ins.*, 12 (4) : 442.

Female : Length 2.00 mm. Body generally green; coxae more or less with yellowish inwardly, middle legs mostly yellowish; scape and legs, except coxae, pale reddish-testaceous; flagellum dark brown; wing hyaline, veins and tegulae pale.

Head and thorax with close irregular umbilicate punctae; cheeks and clypeus with fine converging striae; occiput delicately carinately margined; pedicel subequal to 2 annelli and first funicular segment combined; first funicular segment very slightly longer than thick, the following funicular segments subequal, subquadrate; club with 3 segments, subequal to the preceding 3 funicular segments combined; pronotum short, the dorsal portion smooth posteriorly, punctate along the anterior margin, declivity reticulate and separated from the dorsal portion by a weak carina; mesonotum and scutellum sculptured like vertex; propodeum between the lateral folds sculptured like scutellum, with a very delicate median carina (which is absent in some specimens), the lateral folds very distinct and complete; propodeal nucha large and sculptured a little more coarsely than the area in front of it; fore wing with vein *pm* nearly as long as *m* and distinctly longer than *st*.

Abdomen conic-ovate, as long as thorax, smooth and polished, first tergite almost 0.33 of dorsum.

Very close to *Eupteromalus nidulans* (Thomson) but differing by being much lighter green in colour.

Type locality : Karvetnagar : S. India

Distribution : India, Bangaladesh

Host : Parnara mathias (Fabricius); ex *cholam hesperiid;* also *Cnephalocrocis medinalis* (Guenee)

Anisopteromalus Ruschka

1912 *Anisopteromalus,* Ruschka, *Verh. zool.-bot. Ges. Wien,* 62 : 243.
1913 *Aplastomorpha,* Crawford, *Proc. US nat. Mus.,* 45 : 252.
1923 *Aplastomorpha,* Gahan, *Proc. ent. Soc. Washington,* 25 : 188.
1938 *Aplastomorpha,* Mani, *Cat. Indian Ins.,* 23 : 103.
1951 *Anisopteromalus,* Peck in Muesebeck *et al., Hymen. N. America,* 563.
1952 *Aplastomorpha,* Nikolskaya, *Trud. Zool. Inst. Leningrad,* 225.
1952 *Anisopteromalus,* Nikolskaya, *Trud. Zool. Inst. Leningrad,* 225.
1964 *Anisopteromalus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 46.
1969 *Anisopteromalus,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 433.
1979 *Anisopteromalus,* Krombein *et al.,* Hymen. N. America, 1 : 802.

Propodeum with nucha convex, finely reticulate, projecting a little beyond base of hind coxae; fore wing with speculum not rudimentary; pronotum as wide as mesoscutum, declivous abruptly in front of collar; clypeus emarginate in front without teeth; gena without a hollow; oral fossa not greatly enlarged; antennae inserted not very high on face; occiput not strongly margined; posterolateral angles of propodeum not acute; vein *pm* distinctly longer than *m*; antennae with 13 segments : 1.1.2.6.3; funicular segments short.

Type-species : Anisopteromalus calandrae (How.)

Anisopteromalus calandrae (Howard)

1881 *Pteromalus calandrae,* Howard, in Comstock *Rep. ent. US Dept. Agric. Washington,* 1880 : 283.

1891 *Pteromalus oryzae,* Cameron, *Mem. Proc. Lit. Philos. Soc. Manchester,* 4 : 184.

1909 *Pteromalus calandrae,* Schmiedeknecht, *Gen. Ins.,* 97 : 338.

1909 *Pteromalus oryzae,* Schmiedeknecht, *Gen. Ins.,* 97 : 349.

1910 *Meraporus vandinei,* Tucker, *Cand. Ent.,* 42 : 343.

1912 *Anisopteromalus mollis,* Ruschka, *Verh. zool.-bot. Ges. Wien,* 62 : 243.

1913 *Aplastomorpha pratti,* Crawford, *Proc. US nat. Mus.,* 45 : 252.

1919 *Meraporus vandinei,* Gahan, *Proc. US nat. Mus.,* 5 : 152.

1921 *Aplastomorpha vandinei,* Waterston, *Rep. Grain Pests Comm. R. Soc.,* 9 : 8, 11.

1923 *Aplastomorphs calandrae,* Gahan, *Proc. ent. Soc. Washington,* 25 : 188.

1937 *Neocatolaccus indicus,* Ayyar & Mani, *Rec. Indian Mus.,* 39 : 126.

1938 *Aplastomorpha calandrae,* Mani, *Cat. Indian Ins.,* 23 : 103.

1938 *Pteromalus oryzae,* Mani, *Cat. Indian Ins.,* 23 : 102.

1939 *Anisopteromalus calandrae,* Ferrière, *Bull. ent. Res.,* 30 : 165-166.

1940 *Aplastomorpha calandrae,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 18.

1942 *Neocatolaccus mamezophagus,* Ishii & Nagasawa, *Kontyu,* 16 : 67.

1951 *Anisopteromalus calandrae,* Peck in Muesebeck *et al., Hymen. N. America,* 564.

1963 *Anisopteromalus calandrae,* Peck, *Canad. Ent.,* 30 : 733.

1966 *Anisopteromalus calandrae,* Tachikawa, *J. Appl. Ent. Zool.,* 10 to 99.

1969 *Anisopteromalus calandrae, Gem. Anisopteromalus caladrae,* Graham, *Bull. Brit. Mus.,* (Ent.) 23 : 443.

1972 *Pteromalus schwenkei,* Roomi, Khan & Khan, *Z. angew. Ent.,* 72 : 395-400.

1975 *Lariophagus distinguendus,* Saraswat & Mukerjee, *Mem. School* Ent., 4 : 55. (misidentification ?)

1978 *Anisoptermalus calandrae,* Boucek, Subba Rao & Farooqi, *Orient. Inst.,* 12 : 435.

1979 *Anisopteromalus calandrae,* Krombein *et al* Hymen. N. America, 1 : 802.

Female : Length 2.70-3.00 mm. Head very dark green, almost black; antennae generally brown, scape yellowish-brown; thorax very dark green, propodeum shiny green; legs generally brown or yellowish-brown.

Head in front view rounded; frons swollen, closely reticulate; striations of clypeus very prominent; cheek large, almost as broad as eyes; front ocellus placed at apex of scrobe, front ocellar space less than ocellocular space; antennae inserted just at the level of the lower orbital border; scape slender, very slightly curved; pedicel stouter apically than basally, about 2 times as long as thick; annelli 3, the first 2 smaller and the third much thicker and almost 2 times longer; first funicular segment about 2 times pedicel and somewhat stouter; second funicular segment about 0.50 of the length of first; the following 3 segments somewhat shorter, but each nearly equal, and gradually thick apically; club triarticulate, stouter and somewhat distinctly longer than the preceding 2 segments combined.

Thorax : pronotum reticulate; mesonotum thicker than long; reticulately punctate, parapsidal furrows reaching beyond its middle though not actually touching the posterior edge; scutellum a little shorter than its posterior breadth, sculpture similar to that of mesonotum; propodeum with prominent median carina and lateral spiracular sulci, spiracles small and almost rounded; fore wing with a slight discal ciliation at base; vein *m* somewhat less than 0.50 of the length of *sm; pm* narrower and shorter than *m; st* about 0.67 of *m*.

Abdomen oval, much pointed posteriorly, longer than thorax, third segment not short.

Type locality : U.S.A.

Distribution : Cosmopolitan

Hosts : Ephestia elutella (Hon.), *Callosobruchus chinensis* (L.), *C. phaseoli* (Gyll.), *Lasioderma serricorne* (F.), *Sitophilus granarius* (L.), *S. oryzae* (L.), *S. zeamaise* Mots., *Stator pruinius* (Horn.), *Stegobium paniceum* (L.), *Ectomyelois ceratoniae* Zell. Peck (1963) has listed the host insects of this species.

This species resembles *Neocatolaccus sphenopterae* Ferrière but differs in the following characters: Frons reticulately sculptured; the striations which diverge upwards from the lower border of clypeus rather sharply defined and prominent; antennae inserted just at the level of the lower border of the eyes; club of antennae longer than the preceding 2 segments combined; parapsidal furrows continue a little beyond the middle of mesonotum though not reaching its posterior edge; spiracles on propodeum small and almost rounded; fore wing with a slight discal ciliation at the base; fore wing with vein *m* less than 0.50 of the length of *sm*.

Lariophagus Crawford

1909 *Lariophagus,* Crawford, *Proc. ent. Soc. Washington,* 11 : 52.
1913 *Lariophagus,* Kurdjumov, *Ent. Obozr.,* 13 : 15-16.
1921 *Lariophagus,* Waterston, *Roy. Soc. Rep. Grain Pests Com.,* 9 : 13-19.
1927 *Lariophagus,* Gahan, *Proc. US nat. Mus.,* 71 (4) : 7.
1952 *Lariophagus,* Nikolskaya, *Chalcid. fauna USSR,* 229.
1957 *Lariophagus,* Graham, *Ent. mon. Mag.,* 93 : 217.
1963 *Lariophagus,* Peck, *Canad. Ent.,* 30 : 690.
1964 *Lariophagus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 56.
1965 *Lariophagus,* Boucek, *Sb. fauna Praci. ent. Odd. nar. Mus. Praze,* 11 : 20.
1969 *Lariophagus,* Graham, *Bull. Brit. Mus.* Ent., (Suppl.) 16 : 823.
1979 *Lariophagus,* Krombein *et al.,* Hymen. N. America, 1 : 831.

Posterolateral angles of propodeum actue; hind tibial spur single; clypeus emarginate in front; pronotal collar short; parapsidal furrows incomplete; vein *pm* longer than *st*, antennae inserted slightly

above level of lower orbital borders; antennal segments 13 : 1.1.2.6.3; vein *m* not thickened; propodeal nucha distinct, reticulate; propodeal costula also faint; fore wings hyaline.

Type-species : Lariophagus texanus Crawford

Lariophagus distinguendus (Förster)

(Fig. 140)

1840 *Pteromalus distinguendus,* Förster, *Beitr. Mon. Pteromalinen,* 17.
1849 *Pteromalus calamis,* Walker, *Ann. Mag. Nat. Hist.,* (2) 3 : 207.
1874 *Pteromalus oryzinus,* Rondani, *Bol. Soc. Ent. Ital.,* 6 : 131.
1877 *Pteromalus oryzinus,* Rondani, *Bol. Soc. Ent. Ital.,* 9 : 195.
1910 *Meraporus utibilis,* Tucker, *Canad. Ent.,* 42 : 341.
1913 *Lariophagus distinguendus,* Kurdjumov, *Russk. Ent. Obozr.,* 13 : 15.
1920 *Lariophagus distinguendus,* Gahan, *Proc. ent. Soc. Washington,* 22 : 239.
1921 *Lariophagus utibilis,* Waterston, *Roy. Soc. Rept. Grain Pests Com.,* 9 : 8, 11.
1921 *Lariophagus distinguendus,* Waterston, *Roy. Soc. Rept. Grain Pests Com.,* 9 : 9, 13-15
1921 *Lariophagus distinguendus,* Ruschka, *Z. angew. Ent.,* 7 : 463.
1951 *Lariophagus distinguendus,* Peck in Muesebeck, *Hymen. N. America,* 2 : 555.
1963 *Lariophagus distinguendus,* Peck, *Canad. Ent.,* 30 : 691.
1969 *Lariophagus distinguendus,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 824.
1975 *Lariophagus distinguendus,* Saraswat & Mukerjee, *Mem. School Ent.,* 4 : 55.
1978 *Lariophagus distinguendus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 444.
1979 *Lariophagus distinguendus,* Krombein *et al.,* Hymen. N. America, 1 : 832.

Long. Mill. 1¼

"Corpus atro-nitens, paulo sub-caerulescens.

Antennae nigricantes, scapo toto, aut latissime rugo. Alae hyaline, decolores. Pedes luteo-rufi, femoribus apice obscuro. (Nota) statura, colore corporis etc, similis *P. tritici* Gour. sed distindus, praesertim, antennarum scapo rufo non nigro; pedibus non albicantibus, sed luteo-rufis; femoribus paulo infuscatis etc.

Ex seminibus ortus oryzae, a cina missis, in quibus larvae plures vivebant *Calandrae orizae* Lin. (Obs. Celi)"

Boucek (1978) supposes that this probably concerns *Anisopteromalus calandrae* (Howard).

Female : Malar space about 0.67 of eye; antennae subequal head width; flagellum slender, not stouter than pedicel; fore wing with basal area bare, or with a very few isolated hairs; costal cell narrower, length to breadth about 10 : 1; hind tibial spur single; abdomen convex.

Male : Pedicel 2 times as long as thick; flagellum rather slender, at least some of the proximal funicular segments slightly longer than thick, in large specimens segments 1-4 may be very distinctly longer than thick, sixth segment quadrate.

Type locality : America

Distribution : Cosmopolitan

Host : Bruchus brachialis Fahr., *Lasioderma serricone* (F.), *Rhizopertha dominica* (F.), *Stegobium paniceum* (L.), *Sitophilus granarius* (L.), *S. oryzae* (L.), *S. zeamaise* Mots.

Metastenus Walker

1834 *Metastenus,* Walker, *Ent. Mag.,* 2 : 301.
1904 *Metastenus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 275, 276.
1904 *Scymnophagus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 319, 321.
1909 *Scymnophagus,* Schmiedeknecht, *Gen. Ins.,* 97 : 328, 330, 335.
1956 *Metastenus,* Graham, *Ent. mon. Mag.,* 92 : 256.
1964 *Metastenus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 39.
1969 *Metastenus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 829.
1979 *Metastenus,* Krombein *et al.,* Hymen. N. America, 1 : 834.

Vertex not margined behind; antennae filiform or slightly thickened; propodeal carinae absent; propodeum produced behind into a subglobose and stout nucha; vein *m* only slightly thickened, *pm* a little longer than *st,* abdomen conic-ovate, second tergite occupying 0.33 antennae inserted well above level of lower orbital borders; hind coxae without hair above basally; hind tibial spur single; ovipositor not exserted; parapsidal furrows complete; posterolateral angles of propodeum rounded, antennae with 3 annelli and 5 funicular segments.

Type-species : Metastenus concinnus Walker

Metastenus concinnus Walker

1834 *Metastenus concinnus,* Walker, *Ent. Mag.,* 2 : 302.
1969 *Metastenus concinnus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 829.
1978 *Metastenus concinnus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 445.

Body bronze-coloured; abdomen distinctly longer than thorax, acute at tip.

Type locality : Europe

Distribution : Europe; India : Kerala

Host : Parasite of Coccidophagous coccinellids

Pteromalus Swederus

1758 *Ichneumon* (partim), Linnaeus, *Syst. Nat.*, (ed. 10) : 567.
1795 *Pteromalus,* Swederus, *Svensk. Vet. Akad. Handl.*, 16 : 200.
1856 *Coelopisthia,* Förster, *Hymen. Stud.*, 2 : 65.
1878 *Pteromalus* (*Pteromalus*), Thomson, *Hymen. Scand.*, 5 : 153-155.
1904 *Pteromalus,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 320, 321.
1904 *Coelopisthia,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 320, 322.
1909 *Pteromalus,* Schmiedeknecht, *Gen. Ins.*, 97 : 335.
1913 *Pteromalus,* Kurdjumov, *Russk. ent. Obzor.*, 13 : 17.
1937 *Heterolaccus,* Masi, *Festchr. 60. Geburtstage E. Strand,* 3 : 371.
1938 *Pteromalus,* Mani, *Cat. Indian Ins.*, 23 : 102.
1952 *Pteromalus,* Nikolskaya, *Trud. Z. Inst. Leningrad,* 16 : 230.
1964 *Pteromalus,* Peck *et al.*, *Mem. ent. Soc. Canada,* 34 : 58.
1969 *Pteromalus,* Graham, *Bull. Brit. Mus.*, (Ent.) (Suppl.), 23 : 488.
1979 *Pteromalus,* Krombein *et al.*, Hymen. N. America, 1 : 809.

Occipital foramen not margined; in female pedicel usually shorter than first funicular segment; first funicular segment longest; in male filiform, segments about 2 times as long as thick; propodeal spiracle large; propodeum produced apically into a short subglobose nucha; fore wing with vein *pm* always longer than *st;* abdomen ovate, not longer than rest of body, usually shorter; margins of tergites not incised or emarginate; tergies 3-5 subequal in female, unequal and gradually increasing in length in male, 6 and 7 longer in female; second tergite 2 or more times longer than third.

Type-species : Ptermalus puparum (Linn.)

Pteromalus magniceps Walker

1860 *Pteromalus magniceps,* Walker, *Ann. Mag. nat. Hist.*, (3) 6 : 359.

Male : "Obscure cyaneus, brevis, latus, crassus. antennis fulvis clavatis, scapo luteo, abdomine piceo conico glabro, pedibus fulvis, tarsis posteroribus luteis, alis anticis luridis sat angustis."

"*Male :* Dark blue, shining, short, broad, thick. Head broader than the thorax. Antennae twany, short, clavate; scape luteous. Abdomen piceous, conical, very smooth and shining, reddish and keeled beneath, not longer than the thorax. Legs tawny; posterior tarsi and tips of tibiae luteous; fore wings lurid, rather narrow, veins piceous. Length of body 3/4 line; of the wings 1½ line."

Type locality : Ceylon.

Pteromalus puparum (Linnaeus)

1758 *Ichneumon puparum,* Linnaeus, *Syst. Nat.*, (ed. 10) 1 : 567.
1795 *Pteromalus puparum,* Swederus, *Svensk. Vet.-Akad. Handl.*, 16 : 203.
1835 *Pteromalus latifrons,* Walker, *Ent. Mag.*, 2 : 501.
1836 *Pteromalus cephalotes,* Walker, *Ent. Mag.*, 3 : 481.
1836 *Pteromalus comes,* Walker, *Ent. Mag.*, 3 : 492.

1839 *Pteromalus ornytus,* Walker, *Monogr. Chalcid.,* 1 : 238.
1842 *Pteromalus brassicae,* Curtis, *J. Roy. agric. Soc.,* 3 : 311.
1842 *Pteromalus pontiae,* Curtis, *J. Roy. agric. Soc.,* 3 : 312.
1845 *Pteromalus orinus,* Walker, *Proc. Linn. Soc. London,* (Zool.), 1 : 263.
1860 *Pteromalus brassicae,* Curtis, *Farm. Ins.,* 100.
1860 *Pteromalus pontiae,* Curtis, *Farm. Ins.,* 100.
1872 *Pteromalus nigricans,* Walker, *Notes on Chalcid.,* 121. (preoccupied by Förster, 1840).
1877 *Pteromalus brassicae,* Packard, *Rpt. US Geol. & Geog. Survey,* 9 : 747. (preoccupied in Curtis, 1842).
1881 *Pteromalus pieridis,* Provancher, *Nat. Canad.,* 12 : 296.
1898 *Pteromalus nigritulus,* Dalla Torre, *Cat. Hym.,* 5 : 137. (New name for P. nigricans Walker)
1908 *Pteromalus puparum,* Masi, *Boll. Lab. Zool. gen. Agr. Roy. Scuola Agr. Portici,* 5.
1925 *Pteromalus luzonensis,* Gahan, *Philip. J. Sci.* 27 : 99. (wrongly identified).
1938 *Pteromalus luzonensis,* Mani, *Cat. Indian Ins.,* 23 : 102.
1940 *Pteromalus luzonensis,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 18.
1951 *Pteromalus puparum,* Peck in Muesebeck, *Hymen. N. America,* 2 : 561.
1963 *Pteromalus puparum,* Peck, *Canad. Ent.,* 30 : 718.
1969 *Pteromalus puparum,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 489.
1978 *Pteromalus puparum,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 454.
1979 *Pteromalus puparum,* Krombein *et al.,* Hymen. N. America, 1 : 809.

Female : Length 2.90-3.10 mm. Body green to dark brownish-green; reddish-brown; antennae yellowish-brown, except the dark yellow scape; legs dark yellow; femora brownish-green.

Head about 1.20 times as wide as thorax; vertex obtuse; punctate; face convex below antennae; ocellar triangle obtuse; antennae filiform; pedicel about 0.30 of scape; first funicular segment about 1.15 times as long as thick; following segments gradually becoming shorter; terminal funicular segment as long as thick; club equal to the preceding 2 segments combined; mandible with 4 teeth.

Thorax with distinct collar but not acutely margined; parapsidal furrows distinct only anteriorly; scutellum convex, with frenum; propodeum with large nucha; vein *pm* a little longer than *m.*

Abdomen ovate, a little longer than thorax; first tergite nearly 2 times as wide as long; second the largest, tergites 4, 5 and 6 equally long.

Male : Abdomen oblong; funicle more or less brown; legs yellowish-red, otherwise as in famale.

Type locality : Newfoundland

Distribution : Cosmopolitan

Host : Agraulis vanialle (Linn.), *Colias philodice* (Godart), *Cynthia cardui* (Linn.), *C. carye* (Hbn.), *Epargyreus tityrus* (F.), *Eurema lisa* (Bdv. & Lec.), *Agryrotaenia velutinana* (Walker),

Lambdina fiscellaria (Guenee), *Limenitis archippus* (Cramer), *Malacosoma americanum* (F.), *Nymphalis antiopa* (Linn.), *Papilio polyxenes asterius* Stoll, *Pieris protodice* (Bdv. & Lec.), *P. rapae* (Linn.), *Polygonia satyrus* (Edw.,), *Thyridop teryx ephemeraeformis* (Howard), *Vanessa atalanta* (Linn.), *V virginiensis* (Drury); other hosts reported in literature.

Pteromalus semotus (Walker)

1834 *Eutelus semotus,* Walker, *Ent. Mag.,* 2 : 367.
1835 *Pteromalus imbutus,* Walker, *Ent. Mag.,* 3 : 96.
1835 *Pteromalus solutus,* Walker, *Ent. Mag.,* 3 : 199.
1835 *Pteromalus cupreus,* Walker, *Ent. Mag.,* 3 : 200. (nec. Nees 1834).
1835 *Pteromalus lugubris,* Walker, *Ent. Mag.,* 3 : 205.
1836 *Pteromalus maerens,* Walker, *Ent. Mag.,* 3 : 474.
1836 *Pteromalus thalassinus,* Walker, *Ent. Mag.,* 3 : 485.
1836 *Pteromalus equestris,* Walker, *Ent. Mag.,* 3 : 495.
1839 *Pteromalus poine,* Walker, *Monogr. Chalcid,* 1 : 224.
1839 *Ptermalus mutia,* Walker, *Monogr. Chalcid,* 1 : 246.
1844 *Pteromalus variabilis,* Ratzeburg, *Ichn. forst.,* 1 : 201.
1848 *Pteromalus glautias,* Walker, *List. Hym. Brit. Mus.,* (2) : 124, 181.
1848 *Pteromalus amnisos,* Walker, *List. Hym. Brit. Mus.,* (2) : 124, 182.
1878 *Habrocytus parvinucha,* Thomson, *Hym. Scand.,* 5 : 117.
1898 *Pteromalus cupreicolor,* Dalla Torre, *Cat. Hym.,* 5 : 119.
1906 *Etroxys marginicollis,* Cameron, *J. Bombay nat. Hist. Soc.,* 17 : 97.
1912 *Habrocytus microgastris,* Kurdjumov, *Russk. ent. Obzor.,* 12 : 231.
1913 *Habrocytus remotus,* Kurdjumov, *Russk. ent. Obzor.,* 13 : 20.
1938 *Etroxys marginicollis,* Mani, *Cat. Indian Ins.,* 23 : 101.
1944 *Habrocytus paecilopus,* Blunck, *Z. angew. Ent.,* 30 : 478 : 480.
1953 *Habrocytus milleri,* Delucchi & Verbeke, *Bull. Inst. R. Sci. nat. Belg.,* 29 : 1-14.
1965 *Habrocytus semotus,* Boucek, *Sb. fauna Praci ent. Odd. nar. Mus. Praze,* 11 : 8, 35.
1969 *Habrocytus semotus,* Graham, *Bull. Brit. Mus. nat. Hist.* (Ent.) Suppl., 16 : 529.
1978 *Pteromalus semotus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 454.

Scape without a boss in front; hind femora largely black; fore and middle femora infuscate; antennae blackish-brown; abdomen with or without a pale spot; propodeum in the middle a little wider than long, nucha a little longer than 0.33 of propodeum; weakly reticulate; speculum in fore wing extends behind vein *m* to at least 0.50 of its length; costal cell of fore wing with a complete row of hairs; vein *pm* distinctly or not longer than *m;* coxae black, with metallic reflections; antennae yellow; except coxae, legs yellow; first funicular segment in male at the most 2.50 times as long as thick; equal to or longer than pedicel; sixth funicular segment not more than 2 times as long as thick; vein *m* usually shorter than *st;* gena moderately compressed with lunate hollow at base of mandible; clypeus slightly emarginate in front in the middle, pronotal collar almost horizontal, forming an abrupt right angle with neck in front;

weakly margined in the middle; vein *m* 1.40-1.60 times *st;* abdomen longer than head and thorax; mandibles with 3 rarely 4 teeth; clypeal striations extend to gena; propodeum with median longitudinal carinae irregular; antennal sockets distinctly above level of lower orbital borders; spiracular sulci impressed.

Type locality : Europe

Distribution : Europe; Pakistan : Quetta

Hosts : Hyperparasite on *Coleophora frischella* Linn. attacked by *Bracon osculator* Nees, also *Apanteles.*

Pteromalus sequester Walker

1835 *Pteromalus varius,* Walker, *Ent. Mag.,* 2 : 494.
1835 *Pteromalus sequester,* Walker, *Ent. Mag.,* 2 : 495.
1835 *Pteromalus infectus,* Walker, *Ent. Mag.,* 3 : 186.
1835 *Pteromalus placidus,* Walker, *Ent. Mag.,* 3 : 187.
1836 *Pteromalus epimelas,* Walker, *Ent. Mag.,* 3 : 486.
1836 *Pteromalus simulans,* Walker, *Ent. Mag.,* 3 : 495.
1839 *Pteromalus oroetes,* Walker, *Monogr. Chalcid,* 1 : 211.
1847 *Semiotus apionis,* Goureau, *Ann. Soc. ent. Fr.,* (2) : 5, 252.
1848 *Pteromalus eulimene,* Walker, *List Hym. Brit. Mus.,* (2) : 124, 179.
1852 *Pteromalus leguminum,* Ratzeburg, *Ichn. forst.,* 3 : 234.
1872 *Pteromalus insularis,* Walker, *Notes Chalcid.,* (7) : 100.
1913 *Habrocytus sequester,* Kurdjumov, *Russk. ent. Obzor.,* 13 : 21.
1969 *Habrocytus sequester,* Graham, *Bull. Brit. Mus. nat. Hist.* (Ent.) Suppl., 16 : 554.
1978 *Pteromalus sequester,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 455.

Pronotal collar in the middle 0.16-0.20 of mesoscutum; often not acutely magined; propodeal spiracles large, elongate-oval or linear; vein *pm* subequal to *m;* clypeus incised in front; gena with a narrow lunate hollow at mandibular base; basal funicular segments distinctly longer than thick, rarely subquadrate; apical segments subquadrate, sixth segment transverse; abdomen elongate-oval, subequal to thorax; vein *pm* usually shorter than *m.*

Type locality : Europe

Distribution : Europe, India : Punjab, Delhi

Host : Parasite on some insect attacking pods of Leguminosae.

Catolaccus Thomson

1878 *Pteromalus* Subg. *Catolaccus,* Thomson, *Hym. Scand.,* 5 : 146, 152.
1904 *Catolaccus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 320, 322.
1908 *Catolaccus,* Crawford, *Proc. ent. Soc. Washington,* 9 : 160.
1909 *Catolaccus,* Schmiedeknecht, *Gen. Ins.,* 97 : 355.
1911 *Merisoides,* Masi, *Bol. Lab. Zool. Gen. Agr. Portici,* 5 : 141.

1913 *Merisoides,* Kurdjumov, *Russk. ent. Obozr.,* 13 : 5.
1913 *Catolaccus,* Kurdjumov, *Russk. ent. Obozr.,* 13 : 5.
1952 *Catolaccus,* Nikolskaya, *Chalcid fauna USSR,* 223.
1954 *Catolaccus,* Burks, *Tech. Bull. US Dept. Agr.,* 1093 : 4-8.
1956 *Catolaccus,* Delucchi, *Z. angew. Ent.* 39 : 230.
1964 *Catolaccus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 50.
1969 *Catolaccus,* Graham, *Bull. Brit. Mus. nat. Hist.* (Ent.) Suppl., 16 : 46.
1979 *Catolaccus,* Krombein *et al.,* Hymen. N. America, 1 : 806.

Head stout, not narrowed behind, vertex not margined; eye globrous, antennae inserted far below the middle of face, slender; scape not reaching front ocellus, pedicel shorter than first funicular segment; funicular segments about 2 times as long as thick, thorax closely punctate; collar not acutely margined in front; propodeal carinae and lateral folds distinct, conical nucha present; veins *m, st* and *pm* subequal; abdomen longer than thorax, pointed apically; ovipositor exserted.

Type-species : Catolaccus cavigena Thomson, *(Catolaccus ater* (Ratzerburg))

Catolaccus ater (Ratzeburg)

1852 *Pteromalus ater,* Ratzerburg, *Ichn. Forstin,* 3 : 233.
1878 *Catolaccus cavigena,* Thomson, *Hym. Scand.,* 4 : 152.
1909 *Pteromalus ater,* Schmiedeknecht, *Gen. Ins.,* 97 : 335.
1911 *Merisoides crassiceps,* Masi, *Boll. Lab. Zool. gen. Agr. R. Scuola Agric. Portici,* 5 : 141-145.
1912 *Catolaccus ater,* Kurdjumov, *Russk. ent. Obozr.,* 12 : 232.
1965 *Catolaccus ater,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 36 : 8.
1969 *Catolaccus ater,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 467.
1978 *Catolaccus crassiceps,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12(4) : 438.

Type locality : Germany

Distribution : Pakistan : Bhalwar, Ringli, Wazirabad; India : Punjab, U.P. Delhi; Britain, Sweden, Germany, Czechoslovakia

Host : Platyedra gossypiella, Coniatus indicus Marshall on *Tamarix diocia; Characoma nilotica* Rogen-Hofer; *Apanteles glomeratus* (Linn.), *Apanteles* in *Hymenia fascialis; Centrococcus insolitus* Green.

Norbanus Walker

1843 *Norbanus,* Walker, *Ann. Soc. ent. de France,* (2) : 159.
1856 *Arthrolysis,* Förster, *Hym. Stud.,* 2 : 52.
1878 *Picroscytus,* Thomson, *Hym. Scand.,* 5 : 50, 59.
1904 *Stylophorella,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 275.
1904 *Arthrolysis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 276.
1904 *Norbanus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 320.

1909 *Arthrolysis,* Schmiedeknecht, *Gen. Ins.*, 97 : 284, 285, 287.
1909 *Norbanus,* Schmiedeknecht, *Gen. Ins.*, 97 : 328, 356.
1927 *Picroscytus,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 52 : 263-268.
1938 *Anthrolysis,* Mani, *Cat. Indian Ins.*, 23 : 76.
1951 *Norbanus,* Peck in Muesebeck, *Hymen. N. America.*, 2 : 565.
1952 *Picroscytus,* Nikolskya, *Chalcid fauna USSR,* 231.
1963 *Norbanus,* Peck, *Canad. Ent.*, 30 : 740.
1964 *Norbanus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 46.
1969 *Norbanus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 437.
1979 *Norbanus,* Krombein *et al.,* Hymen. N. America, 1 : 803.

This genus is related to *Cataloccus,* but antennal segments not longer than thick, spiracle minute, abdomen basally below carinate.

Antennae in male with segments 13 : 1.1.2.7.2; propodeal nucha weakly developed, costula absent; pronotum as wide as mesonotum, gena without a hollow; antennae inserted closer to front ocellus than clypeus; propodeum 0.50 of scutellum; first tergite not trilobed behind; speculum almost absent; head and thorax with white hairs; hind tibial spurs double, second minute, weak, about 0.50 of the longer spur; club acute apically; hind coxa bare above basally; occiput not margined; posterolateral angles of propodeum rounded; parapsidal furrows incomplete; clypeus not toothed in front; vein *pm* slightly longer than *st;* ovipositor concealed.

Type-species : Norbanus dysaules Walker

Norbanus acuminatus Dutt & Ferrière

1961 *Norbanus acuminatus,* Dutt & Ferrière, *Indian J. agric. Sci.*, 31 : 141.
1978 *Norbanus acuminatus,* Boucek, Subba Rao & Frooqi, *Orient. Ins.*, 12 (4) : 447.

I have no acess to specimens or description of this species.

Type locality : West Bengal, India
Distribution : India
Host : Nupserha bicolor Thompson

Norbanus birmanus (Masi)

1927 *Picroscytus birmanus,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* 52 : 267.
1938 *Arthrolysis birmanus,* Mani, *Cat. Indian Ins.*, 23 : 77.
1941 *Picroscytus (Masiocytus) indorum,* Szelenyi, *Ann. Hist. Nat. Mus. Natl. Hungarici* (Zool), 34 : 117-131.
1978 *Norbanus birmanus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.*, 12 (4) : 147.

Penultimate funicular segment a little longer than terminal segment; about 1.50 times as long as thick, club subequal to the preceding 2 segments combined; vein *m* : *pm* : *st* ratio 100 : 108 : 44; antennae brown, with scape white basally; abdomen conical.

Type locality : Burma

Distribution : Burma

Host : Unknown

Norbanus indorum (Masi)

1927 *Picroscytus indorum,* Masi, *Ann. Mus. Civ. Stor. Nat. Gacomo Doria,* 52 : 267.

1938 *Arthrolysis indorum,* Mani, *Cat. Indian Ins.,* 23 : 77.

1941 *Picroscytus (Masiocytus) indorum,* Szelenyi, *Ann. Hist. Nat. Mus. Natl. Hungarici* (Zool.) 34 : 117-131.

1978 *Norbanus indorum,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 447.

Head in side view large, with face a little convex below the middle; penultimate funicular segment 1.50 times as long as thick; terminal segment as long as thick; club a little longer than the preceding 2 segments combined; parapsidal furrows obliterated; vein *m* : *pm* : *st* ratio 100 : 80 : 50; scape metallic white at base; pedicel yellow; abdomen conical.

Type locality : India : Chilka Lake, Orissa

Distribution : India : Orissa; Pakistan : Sheikpura

Host : Unknown insect borer in Cyperaceae

Propicroscytus Szelenyi

1941 *Propicroscytus,* Szelenyi, *Ann. Hist. Nat. Mus. Natl. Hungarici* (Zool.) 34 : 123, 125.

1973 *Obtusiclava,* Subba Rao, *Bull. ent. Res.,* 62 : 627.

Female : Head distinctly wider than thorax; occiput not margined; both mandibles 4 dentate; clypeus strigose, lower margin slightly obtuse or rounded; scrobes virtually absent; antennae inserted distinctly above level of ventral edge of eyes, toruli about equidistant from anterior margin of clypeus and median ocellus; segments 13 : 1.1.2.6.3; annelli strongly transverse; flagellum long, all segments longer than broad, with numerous sensillae arranged in 2 or 3 rows on each segment; sutures on clava distinct, not oblique, apical segment bluntly rounded.

Pronotum short, declivous; collar somewhat carinate; parapsidal furrows incomplete, only anteriorly; scutellum without frenum; propodeum with a short nucha and without carinae; plicae absent but indicated only anteriorly by small depressions; callus extensively pilose with white long hairs; fore wing with bare basal cell and speculum; basal vein indicated by hair line; vein *m* slender; veins *pm* and *m* very long, each more than 3 times as long as *st;* hind coxae bare dorsally; hind tibia with one strong spur

Abdomen lanceolate, longer than combined lengths of head and thorax, 3 times as long as broad; petiole transvers; ovipositor sheaths slightly projecting.

Type-species : Propicroscytus mirificus (Girault)

Propicroscytus mirificus (Girault)

1915 *Artholysis mirificus,* Girault, *Mem. Queensland Mus.*, 4 : 191.
1973 *Obtusiclava oryzae,* Subba Rao, *Bull. Ent. Res.*, 62 : 627.
1978 *Propicroscytus mirificus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.*, 12 (4) : 453.

Female : Length 2.50-3.25 mm. Body dark metallic-green; legs, scape, pedicel and annelli yellow; funicle and club dark brown; abdomen brown in the middle and yellow at the sides.

Head 2.50 times as wide as long; closely punctate; ocellar triangle obtuse; ocellocular space about 1.50 times postocellar space; interocellar space 2 times front ocellar space; antennae inserted high in the middle of face; scape about 4.50 times pedicel; funicular segments slender; first 3 funicular segments subequal; club a little less than 2 times the preceding 2 segments combined.

Thorax coarsely punctate; parapsidal furrows faintly indicated only anteriorly; propodeum coarsely punctate, with short nucha; fore wing a little less than 3 times as long as wide; veins *m* : *pm* : *st* ratio 19 : 18 : 6.

Abdomen longer than head and thorax combined.

Male : Length 1.75-2.50 mm. Antennae longer than body; funicle with long verticellate hairs.

Type locality : Australia

Distribution : Australia; India : Orissa, Bhuvaneswar, Nagpur, Warangal, Trivandrum, Aligarh (U.P.); Ceylon.

Host : Parasite of gall midges in *Oryza sativa* and stems of some other grasses, as *Paspalidium* and *Imperata cylindrica.* In rice the host is *Orseolia orizae* (Mani).

Cyrtoptyx Delucchi

1956 *Cyrtoptyx,* Delucchi, *Rev. zool.-bot. Afr.*, 53 : 240-252.
1969 *Cyrtoptyx,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 430.

Pronotal collar not margined, sometimes only weakly carinate in the middle; club sutures not oblique; gena not acute; third annellus narrow, transverse; antennae inserted well above level of lower orbital borders; propodeal nucha reduced to a narrow transverse strip; fore wing with large speculum, immaculate; clypeus not incised in front; hind tibial spurs usually double, one very rudimentary; body

generally bluish-black, dark metallic-green or bronze-tinged; vein *m* thick basally; vein *pm* distinctly longer than *st;* ovipositor only slightly exserted; posterolateral angles of propodeum not acute; parapsidal furrows incomplete; antennae with 3 annelli and 5 funicular segments; first tergite incised on hind margin; scrobe shallow.

Type-species : Cyrtoptyx robustus (Masi)

Cyrtoptyx latipes (Rondani)

1877 *Pteromalus latipes,* Rondani, *Boll. Soc. ent. Ital.,* 9 : 194. pl. iii, fig. 79, species 63.

1978 *Cyrtoptyx latipes,* Boucek, Subba Rao & Faroowi, *Orient. Ins.,* 12 (4) : 441.

"Nigricans, paulo sub-coerubescens; antennae nigricantes, vix puberulae, articulis flagellae 10? 11? aegre distinguendis; scapa subtus rufescente; alae sub-hyaline; vena longitudinalis ordinariae segmento primo, duplo circiter longiore secundo in costa decurrente; pedes nigri, femoribus subcaerules centibus; tibias basi et apice albicantibus, posteriorbus manifeste latiusculis; tarsis omnibus albidis, apice fusco."

Type locality : Europe

Distribution : Pakistan : Islamabad; India : Tamil Nadu, Dohnavur, Coimbatore

Host : Cydia sinana on stem of *Cannabis sativa; Hypolixus truncatulus* on *Amarnanthus spinosus; Cypparis decidua, Bruchus sparti*

Mokrzeckia Mokrzecki

1933 *Mokrzeckia,* Mokrzecki, *Polskie Pismo ent.,* 12 : 143.

1934 *Mokrzeckia,* Morawski, *Wydaw. gospod. wiejsk. Warsz.,* 1 : 18.

1958 *Beierina,* Delucchi, *Entomophaga,* 3 : 271.

1961 *Mokrzeckia,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 32 : 74.

1964 *Mokrzeckia,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 46.

1969 *Mokrzeckia,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 478.

1973 *Mokrzeckia,* Subba Rao, *Orient. Ins.,* 7 (3) : 357.

Head not very transverse, 2 times as wide as long; spiracular sulci shallow, smooth without costulae; propodeum reticulate in the middle; vein *m* usually 2 times *st;* funicular segments 5-6 transverse; pronotal collar long, margined at least in the middle; first funicular segment equal to or longer than pedicel; second annellus subquadrate; clypeus toothed, usually striate; petiole short; propodeal nucha reduced to a ridge, club sutures not oblique; fore wings immaculate; hind tibial spur double; propodeum about 0.50 of scutellum; abdomen ovate-lanceolate, pointed or acuminate; gena

without a hollow; vein *pm* hardly longer than *st*; antennae inserted a little below level of lower orbital border; hind coxae bare above basally.

Type-species : Mokrzeckia pini (Hartig)

Mokrzeckia orientalis Subba Rao

1973 *Mokerzckia orientalis,* Subba Rao, *Orient. Ins.*, 7 (3) : 358.
1973 *Mokrzeckia indica,* Subba Rao, *Orient. Ins.*, 7 (3) : 358.
1978 *Mokreckia orientalis,* Boucek, Subba Rao & Farooqi, *Orient. Ins.*, 12 (4) : 446.

Female : Length 2.40-2.50 mm. Head and thorax bright metallic-blue; legs, except hind coxae, pale yellow to deep yellow; hind coxae dorsally partly concolorous with body; tegulae yellow; antennae dark brown; abdomen dark brown with metallic tinge at sides and the sterna yellow; wings hyaline; veins brown.

Head very much wider than mesoscutum; vertex large, eyes small; ocelli in isosceles triangle with base almost 2 times the sides; postocellocular about 0.60 of ocellocular space; antennae inserted nearer to front ocellus than to the lower clypeal border; scape reaching just beyond front ocellus; scape cylindrical, nearly 7 times as long as pedicel; funicular segments longer than thick, subequal; club only slightly thicker than funicle, longer than fifth and sixth funicular segments combined; mandibles 4 dentate on the right and 3 dentate on the left; clypeus depressed, finely reticulate and deeply emarginate.

Pronotal collar evenly and strongly carinate; mesoscutum and propodeum as in *M. pini* (Hartig); propodeal plicae comparatively narrow; distance between plica and the spiracle narrow; fore wing basal fold and distal part of cubital fold below basal cell with a simple hairline; speculum open below; costal cell with numerous short cilia on the under surface and at the border only; vein *sm* : *m* : *pm* : *st* ratio 70 : 50 : 40 : 25; stigmal knob large and quadrate.

Abdomen ovate or lanceolate, as long as thorax; ovipositor hardly exserted.

Male : Length 2.30 mm. Essentially like female; clypeus very greatly enlarged; antennae inserted nearer to median ocellus than to clypeal border; eyes small, malar space 0.67 of the eye; mandibles 2 dentate, extremely large and sickle shaped; abdomen narrower than thorax, part of tergites 2-4 yellow.

Type locality : Indonesia, Java

Distribution : India; Ranikhet, Dehra Dun, Shillong, Mysore; Indonesia, Ceylon

Host : Cocoons of *Apanteles* sp. on *Cinchona; on Selepa celtis, Apanteles obliqua niger* Wilkinson; *Apanteles malevolus* Wilkinson on *Hybloea puera; Miocolus dubius* on *Hapalia machaeralis* Walker. Hyperparasitic of Lepidoptera, *Homona coffearea* Nienter.

Dibrachys Förster

1856 *Dibrachys,* Förster, *Hym. Stud.,* 2 : 65.
1878 *Pteromalus* subg. *Dibrachys,* Thomson, *Hym. Scand.,* 4 : 147, 160.
1904 *Dibrachys,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 320, 322.
1909 *Dibrachys,* Schmiedeknecht, *Gen. Ins.,* 97 : 329, 330, 358.
1913 *Coelopisthoidea,* Gahan, *Canad. Ent.,* 45 : 179.
1913 *Dibrachys,* Kurdjumov, *Russk. ent. Obozr.,* 13 : 11.
1938 *Dibrachys,* Gahan, *Proc. ent. Soc. Washington,* 40 : 211.
1952 *Dibrachys,* Nikolskaya, *Chalcid. fauna USSR,* 218.
1963 *Dibrachys,* Peck, *Canad. Ent.,* 30 : 674.
1965 *Dibrachys,* Boucek, *Sb. faun. Praci. ent. Odd. nar. Mus. Praze,* 11 : 28.
1969 *Dibrachys,* Graham, *Bull. Brit. Mus. Hist.* (Ent.) Suppl., 16 : 804.
1979 *Dibrachys,* Krombein *et al.,* Hymen. N. America, 1 : 826.

Head hardly wider than thorax, not compressed, eyes glabrous, gena, vertex wide margined in the middle behind; antennae inserted far below the middle of face, segments 13 : 1.1.2.6.3; scape slender, first annellus indistinct, minute; second larger but smaller than the next segment; clypeus not incised in the middle in the front, collar acutely margined, scutellum somewhat convex; propodeum punctate; median carinae and lateral fold weak; nucha almost absent; posterolateral angles not acute; fore wing hyaline, fringe absent at tip; vein *m* thin, longer than *st, pm* only slightly shorter than *st;* abdomen elongate oval; parapsidal furrows complete, even if shallow.

Type-species : Dibrachys boucheanus (Ratzeburg)

KEY TO SUBGENERA

1. Vertex curving strongly in the longitudinal axis; occipital carina very close to the foramen magnum; left mandible with 3 teeth, right mandible with 4 teeth; body squat; abdomen in female only 1.10-1.40 times as long as broad, not or only slightly longer than thorax, only bluntly pointed apically — *Allodibrachys* Boucek

Vertex curving less strongly in the longitudinal axis; carina at most slightly nearer to the foramen magnum than to the posterior ocelli; both mandibles with 4 teeth; body sometimes more slender; abdomen in female 1.60-2.60 times as long as broad, usually longer than thorax, often acute apically — *Dibrachys* Förster

Dibrachys subgenus **Dibrachys** Förster

1856 *Dibrachys,* Förster, *Hym. Stud.,* 2 : 65.
1913 *Coelopisthoidea,* Gahan, *Canad. Ent.,* 45 : 179.
1969 *Dibrachys* subgen. *Dibrachys,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 808.
1979 *Dibrachys* subgen. *Dibrachys,* Krombein *et al.,* Hymen. N. America, 1 : 826.

Body not always short and stout, but slender; abdomen in female relatively long, 1.60-2.60 times as long as thick; usually longer than thorax; pointed behind; vertex not strongly sinuate behind; mandibles with 4 teeth.

Type-species : Dibrachys boucheanus Ratzeburg

Dibrachys (Dibrachys) cavus (Walker)

1834 (?) *Diplolepis microgastri,* Bouche, *Nat. Ins.,* 168.
1835 *Pteromalus cavus,* Walker, *Ent. Mag.,* 2 : 477.
1835 *Pteromalus decedens,* Walker, *Ent. Mag.,* 2 : 478.
1835(?) *Pteromalus perversus,* Walker, *Ent. Mag.,* 2 : 479.
1844 *Pteromalus tenuis,* Ratzeburg, *Ichn. Forstin.,* 1 : 195.
1844 *Pteromalus boucheanus,* Ratzeburg, *Ich. Forstin.,* 1 : 196.
1878 *Dibrachys boucheanus,* Thomson, *Hym. Scand.,* 4 : 161.
1913 *Dibrachys cavus,* Kurdjumov, *Russk. ent. Obozr.,* 13 : 11.
1951 *Dibrachys cavus,* Muesebeck *et al., Hymen. N. America,* 553.
1963 *Dibrachys cavus,* Peck, *Canad. Ent.* (Suppl.), 674.
1965 *Dibrachys cavus,* Boucek, *Sb. faun. Praci ent. odd. nar. Mus. Praze,* 11 : 30.
1969 *Dibrachys (Dibrachys) cavus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 810.
1978 *Dibrachys cavus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 441.
1979 *Dibrachys (Dibrachys) cavus,* Krombein *et al.,* Hymen. N. America, 1 : 826.

Female : Head and thorax bronze; dark bluish or dark greenish-blue; scape often entirely fuscous, but sometimes testaceous proximally, rarely mainly so; pedicel and flagellum usually fuscous to black, occasionally the pedicel paler beneath; fore wing hyaline or whitish hyaline; legs variable in colour; from almost entirely black to extensively testaceous; in those having the palest legs only the coxae black, the remainder being testaceous with the femora and tibiae slightly brownish; tarsi sometimes mainly testaceous but more often mainly brown or fuscous.

Head 1.85-1.90 times as wide as long; face below toruli convex, reticulate; clypeus shallowly emarginate, with a short, shallow median impression; oral fossa 2.10-2.15 times malar space; eyes 1.50-1.60 times as long as wide; head in profile posterior orbit shallowly emarginate in the middle; second annellus sometimes quadrate or only slightly transverse, at most the distal segments of the funicle slightly transverse.

Vein *m* 2.00-2.90 times *st;* vein *st* usually small, not distinctly oblong; *pm* usually as long as or even very slightly longer than *st.*

Abdomen usually longer than thorax, acute apically.

Male : Head and thorax green to blue; axilae and scutellum concolorous, scutellum at most slightly tinged bronze; abdomen nearly always without, or with a very small and indistinct pale spot, rarely with the spot distinct; antennae variable, often entirely

testaceous but sometimes pedicel and scape infuscate; flagellum occasionally brown; legs sometimes paler, but in dark forms femora and tibiae heavily infuscate; scape slender, 6.50-7.50 times as long as thick, without a projecting lobe at its distal end; pedicel shorter than in female, hardly more than 2 times as long as thick; funicle slender, segments quadrate, basal segments slightly longer than thick; club 2.30-3.00 times as long as thick; flagellum with curved, subdecumbent hairs.

Type locality Newfoundland

Distribution Cosmopolitan

Host : Polyphagous parasite; primary, often secondary or also tertiary on diverse insects and spiders like *Epeira;* insect hosts include *Forficula, Chrysopa, Bruchus, Hypera, Sitophilus, Galleria, Phthorimaea* and numerous other Lepidoptera, Hymenoptera like *Campoplex, Diprion, Habrocytus, Macrocentrus, Meteorus, Pteromalus, Tetrastichus,* etc. (*Vide* Krombein *et al.,* 1979 for complete list of hosts from the world.)

Schizonotus Ratzeburg

1852 *Schizonotus,* Ratzeburg, *Ichn. Forstins,* 3 : 230.
1904 *Schizonotus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 283, 284.
1909 *Schizonotus,* Schmiedeknecht, *Gen. Ins.,* 97 : 155, 157.
1913 *Schizonotus,* Kurdjumov, *Russk. ent. Obzr.,* 13 : 7.
1921 *Schizonotus,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* (3) 2 : 236.
1925 *Schizonotus,* Ferrière & Faure, *Ann. Epiphyt.,* 11 : 233.
1952 *Schizonotus,* Nikolskaya, *Chalcid. fauna USSR,* 227.
1956 *Schizonotus,* Graham, *Ent. mon. Mag.,* 92 : 255.
1956 *Schizonotus,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 32 : 395.
1958 *Schizonotus,* Boucek, *Acta, ent. Mus. Natl. Pragae,* 32 : 395-404.
1964 *Schizonotus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 48.
1969 *Schizonotus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 817.
1979 *Schizonotus,* Krombein *et al.,* Hymnen. N. America, 1 : 830.

Scutellar frenum distinct; hind coxae sculptured like propodeum, fore coxae larger, squamously punctate, propodeum sharply carinate; nucha reduced to sublunate strip; antennal segments 12; head not protuberant at antennal sockets; antennae inserted very slightly above the level of lower orbital border; 2 annelli transverse; funicle 6; vein *m* 1.70-2.00 times *st; pm* equal to or shorter than *st;* vertex not acutely margined behind; abdomen subglobose; gena acute; eyes glabrous or nearly so; posterolateral angles of propodeum not prominent; hind tibial spur single.

Type-species : Schizonotus sieboldi Ratzeburg

KEY TO SPECIES

1.	Females	2
	Males	3
2.	Clypeus projecting somewhat below the level of gena; funicle yellowish beneath, darker above, fuscous to blackish; 2 annelli together longer than width of second annellus; second funicular segment subquadrate	*S. sieboldi* (Ratzeburg)
	Clypeus not projecting below the level of genae; flagellum uniformly fuscous to black; combined length of 2 annelli approximately equal to width of second annellus; second funicular segment 1.20-1.50 times as thick as long	*S. latus* (Walker)
3.	Flagellum yellow, club black, often not longer than funicular segments 5 and 6 combined; first funicular segment subquadrate, distal segments thicker than long	*S. sieboldi* (Ratzeburg)
	Flagellum uniformly testaceous to brown, club not distinctly darker than funicle; longer than funicular segments 5 and 6 combined; funicular segments slightly thicker than long; first segment usually shorter than second and sometimes almost annelliform	*S. latus* (Walker)

Schizonotus sieboldi (Ratzeburg)

1852 *Pteromalus (Schizonotus) sieboldi,* Ratzeburg, *Ichn. Forstins.,* 3 : 230.
1909 *Schizonotus sieboldi,* Schmiedeknecht, *Gen. Ins.,* 97 : 163.
1958 *Schizonotus sieboldi,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 32 : 395-397.
1964 *Schizonotus (Schizonotus) sieboldi,* Boucek, *Beit. Ent.,* 14 : 672.
1969 *Schizonotus sieboldi,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 819.
1978 *Schizonotus sieboldi,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 445.

Female : Clypeus projecting below gena; antennae yellow below, darker above; club fuscous to black; annelli together longer than width of second annellus; second funicular segment subquadrate.

Male : Antennae yellow; club black, not longer than preceding 2 funicular segments combined; first funicular segment subquadrate; terminal funicular segments thicker than long.

Type locality : Europe

Distribution : Pakistan : Murree; Europe

Host : Melasoma populi on *Populus* sp.

Schizonotus latus (Walker)

1833 *Pteromalus latus,* Walker, *Ent. Mag.,* 1 : 481.
1841 *Pteromalus latus,* Haliday, *Entomologist,* 1 : 5.

1907 *Arthrolytus incongruens,* Masi, *Bol. Lab. Zool. Gen. Agr. Portici,* 1 : 252.
1909 *Pteromalus latus,* Schmiedeknecht, *Gen. Ins.,* 97 : 346.
1913 *Coelopisthia smithii,* Gahan, *Canad. Ent.,* 45 : 179.
1956 *Schizonotus latus,* Graham, *Ent. mon. Mag.,* 92.
1958 *Schizonotus latus,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 32 :
1969 *Schizonotus latus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 818.
1978 *Schizonotus latus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 455.
1979 *Schizonotus latus,* Krombein *et al.,* Hymen. N. America, 1 : 830.

Female : Clypeus not projecting below level of gena; antennae uniformly fuscous to black; annelli together subequal to the width of second annellus; second funicular segment 1.20-1.50 times as thick as long.

Male : Antennae uniformly testaceous to brown; club much darker, longer than funicular segments 5-6 combined; funicular segments a little thicker than long; first funicular segment shorter than second and even annelliform.

Type locality : Maine, Europe

Distribution : Europe; Pakistan : Lyallpur; N. America

Host : Chrysomela alnicola Brown, *C. interrupta* (F.), *C. knabi* Brown, *C. scripta* (F.), *Plagiodera versicolora* (Laich.)

Tribe Rhaphitelini

1904 *Rhaphitelini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 315.
1909 *Rhaphitelina,* Schmiedeknecht, *Gen. Ins.,* 97 : 316.
1979 *Rhaphitelini,* Krombein *et al.,* Hymen. N. America, 1 : 797.

Antennae inserted in the middle of face; mandible with 4 teeth on the right and 3 teeth on the left; genera included *Pandelus* Förster, *Metacolus* Förster, *Rhaphitelus* Walker, *Rhopalicus* Förster, *Stenomalus* Thomson, *Cecidostiba* Thomson, *Caenacis* Förster, *Habrocytus* Thomson, *Dinotiscus* Ghesquiere.

Metacolus Förster

1856 *Metacolus,* Förster, *Hymen. Stud.,* 2 : 65, 70.
1878 *Pterosema,* Förster, *Nat. Ver. Rheinland,* 35 : 44.
1904 *Metacolus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 315, 316.
1909 *Metacolus,* Schmiedeknecht, *Gen. Ins.,* 97 : 317.
1957 *Metacolus,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 2 : 76.
1963 *Metacolus,* Hedqvist, *Stud. Forest Suecica,* 11 : 97.
1965 *Metacolus,* Burks, *Proc. ent. Soc. Washington,* 67 : 116.
1969 *Metacolus,* Graham, *Bull. Brit. Mus. (Ent.)* Suppl., 16 : 418.
1979 *Metacolus,* Krombein *et al.,* Hymen. N. America, 1 : 498.

Head somewhat wider than high; clypeus reticulate, incised in the middle on front margin; antennae inserted a little below lower orbital border; funicular segments gradually becoming shorter, subquadrate; club short; pronotum large, without collar; mesonotum flat; thorax a little flattened; propodeum completely smooth, without carinae; fore wing width longer than *st;* vein *m* thickened; vein *pm* slightly shorter than *m* and only a little longer than *st*; parapsidal furrows incomplete; fore and hind femora slightly thickened; hind coxae hairy above basally.

Type-species : Metacolus unifasciatus Förster

Metacolus beesoni (Mani & Kaul)

(Fig. 143)

1973 *Zapachia beesoni,* Mani & Kaul, *Mem. School Ent.,* 2 : 60.

1978 *Metacolus beesoni,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 445.

Female : Length 2.00-3.90 mm. Body largely metallic; head and thorax metallic-green, with some violet reflections; abdomen mostly violet, with some faint blue-green reflections; legs brown; scape and pedicel brown, rest of antennae blackish-brown; fore wing hyaline, with large reddish-brown infuscation in the middle behind the veins *m* and *pm* extending backward to nearly the 0.75 of the width of wing and becoming increasingly faint behind; veins generally brown.

Head viewed in front width to height ratio 100 : 86; face closely, minutely reticulate; viewed above 2 times as wide as long; ocellocular space equal to about 2 ocellar diameters, interocellar space about 2 times ocellocular space; front ocellar space equal to ocellar diameter; vertex minutely, closely reticulate; occiput distinctly margined; viewed from side height to thickness ratio of 100 : 22; gena about 0.40 of the eye; antennae inserted distinctly a little below the middle of face; scape long, slender, distinctly over 6 times as long as thick; pedicel about 0.33 of scape, a little over 2 times as long as thick; annellus about 0.25 of pedicel; first funicular segment shortest, about 0.33 of pedicel; second segment equal to pedicel and about 2 times as long as thick; segments 3-4 subequal, each about 0.70 of the second segment; fifth segment a little shorter than the fourth; segments 6-7 subequal and each a little shorter than the fifth; club segments 3; slightly over preceding 2 segments combined; pronotum, scutum and scutellum ratio 10 : 65 : 40; pronotum about 3.50 times as wide as long; scutum length to width ratio 100 : 83; scutellum length to width 100 : 75; parapsidal furrows absent; propodeum smooth without median carina; spiracle remote from the anterior border by its own diameter; fore wing length to width 100 : 42; veins *sm* : *m* : *pm* : *st* ratio 470 : 100 : 63 : 63; *sm* interrupted abruptly at terminal 0.33, vein *m* conspicuously thickened, *pm* and *st* moderately thickened; hind wing about 0.70 of fore wing and about 4 times as long as wide;

fore femur compressed and about 3 times as long as thick; tibia about 0.80 of the femur; tarsus about 0.80 of tibia, with long tibial spur, spur a little shorter than metatarsus; metatarsus about 0.30 of tibia; second tarsal segment about 0.80 of metatarsus, third segment about 0.60 of the second, fourth segment shortest, about 0.60 of the third, fifth segment about 2.50 times the fourth, claw simple and curved evenly; middle femur equal to fore femur and almost 4 times as long as thick; tibia slightly longer than femur; tarsus about 0.60 of tibia, tibial spur almost equal to metatarsus; metatarsus nearly 0.16 of tibia; second tarsal segment distinctly shorter than metatarsus; third segment about 0.80 of the second; fourth segment shortest, a little over 0.50 of the third; fifth segment about 2.50 times the fourth; claw simple and evenly curved; hind femur distinctly longer than the middle femur and a little over 3 times as long as thick; tibia long, slender, about 1.30 times the femur; tarsus a little over 0.60 of tibia; metatarsus nearly 0.25 of tibia; tibial spur about 0.33 of metatarsus; second tarsal segment slightly more than 0.50 of metatarsus; third segment about 0.70 of the second; fourth segment shortest and about 0.75 of the third; fifth segment about 1.60 times the fourth; claw simple and evenly curved; abdomen smooth, shiny, a little less than 0.50 of the body.

Type locality : Simla Hills : Theog, 1800-1900 m above mean sea-level (Garhwal Himalaya)

Distribution : Siwalik Ranges of the Garhwal Himalaya and Kashmir (Northwest Himalaya)

Metacolus unifasciatus Förster

1856 *Metacolus unifasciatus,* Förster, *Hym. Stud.,* 2 : 70.

1963 *Metacolus unifasciatus,* Hedqvist, *Stud. Forest Suecica,* 11 : 97.

1978 *Metacolus unifasciatus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 445.

Female : Length 2.70-4.20 mm. Head and thorax shiny greenish-blue, mesothorax with red reflections; propodeum and base of abdomen shiny violet-blue, rest of abdomen dark blue, scape orange, pedicel dark orange, rest of antennae brownish-black, fore legs bright orange, femur with metallic-green tip; middle legs coloured like fore legs, hind legs reddish-brown, coxae bluish-green-violet, fore wing with a large dark spot the whole length of vein *m* and to base of *st* extending backward in a weak curve to a little beyond 0.50 of width of wing.

Head hardly wider than thorax, antennae with 13 segments : 1.1.2.6.3; pedicel equal to first funicular segment, ocellocular space equal to interocellar space; parapsidal furrows present only anteriorly; head and thorax reticulate; abdomen equal to head and thorax combined; hind metatarsus equal to the following 2 segments combined; vein *m* 2 times *pm; st* equal to *pm*.

Male : Length 2.70-3.50 mm. The second and third abdominal tergites yellowish-brown.

Type locality : Europe

Distribution : India : Himachal Pradesh; Europe

Host : Ips, Blastophagus pityogenis, etc.

Tribe Eutelini

1904 *Eutelini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 317.
1909 *Eutelina,* Schmiedeknecht, *Gen. Ins.,* 97 : 322.

Genera included *Psilonotus* Walker, *Nasonia* Ashmead, *Mesopolotus* Westwood.

In its mandibular characters this tribe agrees with the Rhaphitelini and is easily confused with the latter, but the antennae always inserted low down on the face, usually close to clypeus on or below the level of lower orbital border.

The species attack dipterous gall-makers, Cecidomyiidae etc.

Nasonia Ashmead

1904 *Mormoniella,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 316, 317.
1904 *Nasonia,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 317, 318.
1909 *Mormoniella,* Schmiedeknecht, *Gen. Ins.,* 97 : 316, 317, 322.
1909 *Nasonia,* Schmiedeknecht, *Gen. Ins.,* 97 : 323, 325.
1909 *Nasonia,* Girault & Sanders, *Psyche,* 16 : 119-132.
1910 *Nasonia,* Brues, *Canad. Ent.,* 42 : 260.
1913 *Mormoniella,* Kurdjumov, *Ent. Obozr.,* 13 : 5.
1927 *Mormoniella,* Gahan, *Proc. US nat. Mus.,* 71 (4) : 5.
1946 *Nasonia,* Gahan & Peck, *J. Wash. Acad. Sci.,* 36 : 316.
1951 *Nasonia,* Muesebeck *et al., Hymen. N. America,* 2 : 559.
1951 *Nasonia,* Peck, *US Dept. Agric.,* 2 : 559.
1952 *Mormoniella,* Edwards, *Ent. mon. Mag.,* 88 : 1056.
1952 *Mormoniella,* Nikolskaya, *Chalcid. fauna USSR,* 221.
1963 *Nasonia,* Peck, *Canad. Ent.,* 30 : 709.
1963 *Nasonia,* Hedqvist, *Stud. Forest. Suecica,* 11 : 125.
1964 *Nasonia,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 30, 48.
1969 *Nasonia,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 779.
1979 *Nasonia,* Krombein *et al.,* Hymen. N. America, 1 : 882.

This genus resembles *Habrocytus* but pronotum not wide and not acutely margined. Head not compressed anteroposteriorly, 2 times as wide as long, vein *pm* subequal or slightly shorter than *st;* antennal segments 13 : 1.1.2.6.3; second funicular segment annelliform; mandible with 4 teeth on both sides; first funicular segment much shorter than pedicel, which latter in female, equal to annellus and first 2 funicular segments combined; propodeum with

reticulate rounded nucha, lateral folds distinct with weak median carinae; abdomen oval; ovipositor hardly exserted; hind tibial spur single; parapsidal furrows almost complete; scutellum behind with frenum.

Type-species : Nasonia vitripennis (Walker)

Nasonia vitripennis (Walker)

1836 *Pteromalus vitripennis,* Walker, *Ent. Mag.,* 3 : 492.
1838 *Pteromalus muscarum,* Hartig, *Jahrb. Forstwiss. Fors.,* 1 : 256.
1858 *Pteromalus abnormis,* Boheman, *Forh. ofvers. Svensk. Vetensk. Akad.,* 15 : 58, 59.
1872 *Dicyclus pallinervosus,* Walker, *Notes on Chalcid,* 117.
1872 *Stictonotus insuetus,* Walker, *Notes on Chalcid,* 117.
1872 *Pteromalus abnormis,* Thomson, *Hym. Scand.,* 4 : 174.
1904 *Mormoniella brevicornis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 316.
1904 *Nasonia brevicornis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 317.
1909 *Nasonia brevicornis,* Girault and Sanders, *Psyche,* 16 : 119.
1910 *Nasonia brevicornis,* Girault & Sanders, *Psyche,* 17 : 9.
1910 *Nasonia brevicornis,* Brues, *Can. Ent.,* 42 : 260.
1913 *Nasonia brevicornis,* Girault, *Mem. Queensland Mus.,* 2 : 307.
1913 *Mormoniella brevicornis,* Kurdjumov, *Rev. Russ. d'Ent.,* 13 : 5.
1913 *Lariophagus abnormis,* Kurdjumov, *Rev. Russ. d'Ent.,* 13 : 15.
1913 *Platymesopus macellariae,* Bréthès, *An. Buenos Aires Mus. Nac. Hist. Nat.,* 24 : 92.
1915 *Nasonia brevicornis,* Girault, *Mem. Queensland Mus.,* 3 : 316.
1927 *Nasonia vitripennis,* Gahan, *Proc. US nat. Mus.,* 71 (4) : 5.
1946 *Nasonia vitripennis,* Peck, *J. Wash. Acad. Sci.,* 36 : 316.
1951 *Nasonia vitripennis,* Peck in Muesebeck, Hymen. N. America, 2 : 559.
1954 *Mormoniella vitripennis,* Edwards, *Behaviour,* 7 : 88-112.
1957 *Nasonia vitripennis,* de Santis, *Mus. Notes La Plata Univ. Nac.,* 19 : 169.
1958 *Mormoniella vitripennis,* Whiting, *Proc. tenth Int. Congr. Ent.,* 2 : 857.
1958 *Nasonia vitripennis,* Tonapi, *Trans. Roy. ent. Soc. London,* 110 : 550.
1960 *Nasonia vitripennis,* Saul, *Rev. Sursse Zool.,* 67 : 270.
1960 *Nasonia vitripennis,* de Santis, *Rev. Fac. Agron. Buenos Aires,* (3) 36 : 116-117.
1960 *Mormoniella vitripennis,* Barrass, *Behaviour,* 15 : 185-209, 210-218.
1961 *Mormoniella vitripennis,* Barrass, *Behaviour,* 18 : 288-312.
1963 *Nasonia vitripennis,* Hedqvist, *Stud. Forest Suecica,* 11 : 125-127.
1963 *Nasonia vitripennis,* Peck, *Canad. Ent.,* 30 : 709.
1969 *Nasonia vitripennis,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 779.
1979 *Nasonia vitripennis,* Krombein *et al.,* Hymen. N. America, 1 : 822.

Female : Length 2.00-2.50 mm. Body bluish-black, with bronze reflections; scape and pedicel reddish-yellow, funicle and club largely brown, except coxae, legs reddish-yellow; all femora with a brown streak.

Head as wide as high, antennae inserted on lower orbital border, funicular segments thicker than long; scape equal to funicle; pedicel

longer than the first 2 funicular segments combined; parapsidal furrows almost complete; head, thorax and propodeum reticulate; abdomen oval; vein *st* equal to *pm*, little shorter than *m*; hind tibial spur single.

Male : Length 2.00 mm. Like female.

Type locality : Europe

Distribution : Cosmopolitan

Hosts : Calliphora sp., *C. vician* R.-D., *Cochliomyia hominivorax,* (Coq.) *C. macellaria* (F.) *Fannia* sp., *F. canicularis* (L.), *F. femoralis* (Stein.), *F. scalaris* (F.) *Hübneria estigmenensis* (Sellers), *Hypoderma* sp., *Lucilia* sp., *L. illustris* (Meig.) *Musca* sp., *M. domestica* L., *Omotoma fumiferanae* (Tothill), *Ophyra aenescens* (Wied.), *O. leucostoma* (Weid.), *Phaenicia eximia* (Weid.), *P. mexicana* (Macq.), *P. sericata* (Meig.), *Phormia regina* (Meig.), *Piophila casei* (L.), *Polietes lardaria* (F.), *Protocalliphora avium* S. and D., *P. metallica* (Towns), *P. sialia* S and D., *Sarcophaga* sp. *Synthesiomyia nudiseta* (Wulp.).

SUBFAMILY PACHYNEURINAE

1904 *Pachyneuronini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 329.
1909 *Pachyneuronina,* Schmiedeknecht, *Gen. Ins.,* 97 : 371.
1979 *Pachyneurini,* Krombein *et al.,* Hymen. N. America, 1 : 794.

Antennae inserted in the middle of face; vein *m* short and conspicuously thickened.

Genera included *Pachyneuron* Walker, *Euneura* Walker, *Pachycrepoideus* Ashmead, *Coruna* Walker, *Oricoruna* Boucek, *Manineura* Boucek.

KEY TO GENERA

1. Parapsidal furrows complete	2
Parapsidal furrows incomplete	3
2. Antennal segments 12 : 1.1.2.6.2; second tergite transverse; clypeus dentate	*Coruna* Walker
Antennal segments 13 : 1.1.3.5.3; second tergite not transverse; clypeus produced distinctly in front, with a wide depression laterally ..	*Oricoruna* Boucek
3. Antennae inserted on level of lower orbital border; pronotal collar not margined; antennal segments 13 : 1.1.3.5.3.	*Pachycrepoideus* Ashmead
Antennae inserted slightly above level of lower orbital border; antennal segments 13 : 1.1. 2.6.3 or sometimes also 1.1.3.5.3	4
4. Abdomen flat dorsally	*Pachyneuron* Walker
Abdomen convex dorsally	5
5. Pronotal collar not margined	*Manineura* Boucek
Pronotal collar distinctly margined	6
6. Fore wing fringed apically	*Euneura* Walker

Coruna Walker

1833 *Coruna,* Walker, *Ent. Mag.,* 1 : 371, 379.
1846 *Coruna,* Walker, *List Hym. Ins.,* 1 : 24 (invalid, preoccupied)
1856 *Coruna,* Förster, *Hym. Stud.,* 2 : 59.
1856 *Pachycrepis,* Förster, *Hym. Stu.,* 2 : 51, 54, 59.
1878 *Pachycrepis,* Thomson, *Hym. Scand.,* 4 : 18, 26.
1904 *Pachycrepis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 329.
1909 *Pachycrepis,* Schmiedeknecht, *Gen. Ins.,* 97 : 372.
1952 *Pachycrepis,* Nikolskaya, *Chalcid fauna USSR,* 242.
1964 *Pachycrepis,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 36.
1969 *Coruna,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 845.
1979 *Coruna,* Krombein *et al.,* Hymen. N. America, 1 : 794.

Head somewhat wider than thorax, occiput not margined; antennae filiform, inserted in the middle of face, segments 12 : 1.1.2. 6.2; scape linear, funicular segments not transverse, club long pointed; eyes large bulging; gena compressed; clypeus dentate at tip; collar acutely margined, parapsidal furrows complete; propodeum punctate with a short nucha, posterolateral angles not acute; vein *m* stout, equal to *st*; which latter ends in thick knob, much shorter than *pm*; petiole short, abdomen ovate; second tergite transversely linear.

Type-species : Coruna clavata Walker

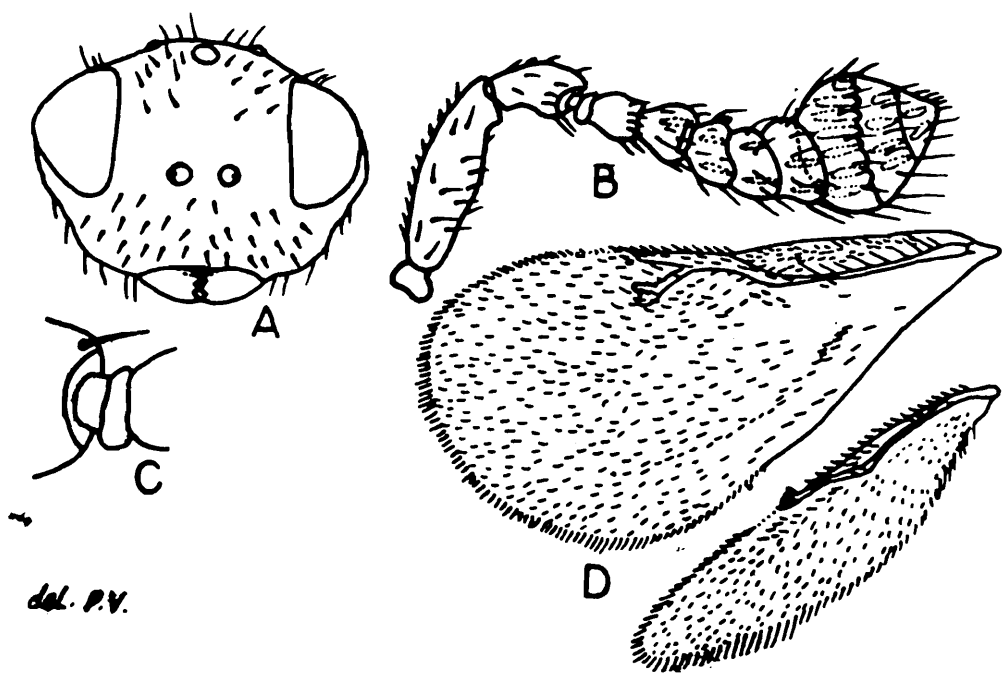

FIG. 142. *Coruna clavata* Walker, female : A. Head in front view; B. Antenna; C. Annelllus; D. Fore and hind wings.

Coruna clavata Walker

(Fig. 142)

1883 *Coruna clavata,* Walker, *Mogogr. Chalc. ent. Mag.,* 1 : 371, 379, 380.
1834 *Chrysolampus lagenarius,* Nees, *Hym. Ichn. Affin. Monogr.,* 2 : 132.

1841 *Pteromalus aphidivorus,* Förster, *Beitr. Monogr. Pteromalinen,* 28.
1841 *Pteromalus segmentarius,* Förster, *Beitr. Monogr. Pteromalinen,* 28.
1841 *Coruna clavata,* Haliday, *Entomologist,* 1
1848 *Gastrancistrus heirocles,* Walker, *Chalcid. List Hym. Brit. Mus.,* 2 : 105, 158.
1879 *Coruna dubia,* Buckton, *Monogr. Brit. Aphides,* 2 : 86.
1909 *Pachycrepis clavata,* Schmiedeknecht, *Gen. Ins.,* 97 : 372.
1963 *Coruna clavata,* Peck, *Canad. Ent.,* 30 :
1969 *Coruna clavata,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 845.
1974 *Coruna clavata,* Mani & Saraswat, *Mem. School Ent.,* 3 : 89.
1978 *Coruna clavata,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 440.
1979 *Coruna clavata,* Krombein *et al.,* Hymen. N. America, 1 : 794.

Female : Length 2.56 mm, fore wing 2.00 mm, abdomen including petiole 1.24 mm. Body dark brown to black, without metallic reflections; head black; antenna dark brown; legs dark brown, coxae, trochanters, distal 0.75 of fore femur, the whole of middle and hind tibia, last tarsi dark brown, otherwise legs yellowish-brown; wings hyaline, veins faint yellowish-brown.

Head viewed in front length to width 70 : 100; finely reticulate, vertex and frons with sparse shallow punctae; gena with distinct carina; clypeus indistinctly pointed in front; ocellocular space 1.66 times ocellar diameter, front ocellar space 1.25 times ocellar diameter; antennal segments 11 : 1.1.1.5.3; scape stout in the middle, with obscure reticulate microsculpture, very slightly more than 3 times as long as thick; pedicel about 1.75 times longer than thick and slightly less than 0.50 of scape; annellus 3.50 times as wide as long; first funicular segment 1.15 times longer than thick, second as long as thick, segments 3-5 gradually becoming thicker than long; club very much stouter than funicle, about 1.10 times longer than thick, first segment 2 times thicker than long.

Thorax finely reticulate; scutellum without transverse line, propodeum without carina, parapsidal furrows complete; fore wing with marginal fringe, length to width 100 : 52, veins *sm* : *m* : *pm* : *st* ratio 466 : 100 : 100 : 111; *m* 3.60 times longer than thick, *m* and *pm* with 7 and 6 setae respectively; hind wing with marginal fringe, hind to fore wing length 75 : 100; fore coxa 2 times as long as wide, finely reticulate; femur about 3 times as long as thick, femur to coxa 4 : 3, with the reticulate microsculpture, distinctly attenuated apically; tibia a little longer than coxa, 0.84 of femur and slightly more than 4 times as long as thick; tarsus equal to femur, slightly less than 1.20 times longer than tibia, metatarsus slightly more than 0.25 of tarsus and about 0.33 of tibia, with 12-13 stout spines below, second segment slightly more than 0.50 of metatarsus, third segment 0.50 of metatarsus and very slightly shorter than the second, fourth very slightly shorter than the third, fifth equal to metatarsus, also equal to third and fourth segments combined; middle coxae about 1.30 times as long as thick, finely transversely reticulate; femur about 3.30 times longer than thick, about 2.30 times coxa, with fine

reticulate microsculpture, attenuated apically; tibia about 1.20 times femur, almost 7 times as long as thick, with 18-20 stout spines on outer side, tibial spur equal to metatarsus; tarsus almost equal to femur, tarsus to tibia 4 : 5, metatarsus 0.25 of tarsus and about 0.20 of tibia, with 6 stout spines below, second segment only very slightly shorter than metatarsus, third about 0.75 of the second, fourth 0.50 of metatarsus, fifth almost equal to the second; hind coxae 1.60 times as long as thick, finely transversely reticulate, with 3 long setae above and 10-11 below; femur about 3 times as long as thick and about 1.50 times coxa, with fine reticulate microsculpture; tibia about 1.25 times femur, almost 7 times than thick, with 12-14 stout spines on outer side, spur very slightly more than 0.50 of metatarsus; tarsus almost equal to middle tibia, tarsus to tibia 8.: 9, metatarsus about 0.25 of tarsus and very slightly more than 0.20 of tibia, with 9 stout spines below, second segment slightly shorter than metatarsus and 0.20 of tarsus, third about 0.75 of the second, fourth almost 0.50 of metatarsus; fifth equal to preceding 3 and 4 tarsal segments combined.

Petiole thicker in the middle, abdomen including petiole very slightly less than 0.50 of body, petiole 2.66 times thicker than long and about 0.55 of the abdomen, abdomen shiny; ovipositor slightly exserted.

Type locality : New Brunswick

Distribution : America; Europe; India : Delhi, Dalhousie, (Himachal Pradesh)

Host : Aphidius sp., *Praon* sp.

Oricoruna Boucek

1910 *Pachycrepis* (partim), Crawford, *Tech. Ser. Bur. Ent. US.*, 19 : 132.
1979 *Oricoruna,* Boucek, *Orient. Ins.*, 12 (4) : 469.

Vertex almost without occipital carina; strongly transverse; interocellar space almost equal to ocellocular space; temples strongly receding behind the elliptic and bare eyes, which are rounded evenly in the lowest part; toruli approximate, slightly above the middle of face; scrobes moderately shallow, reaching front ocellus; lower part of face convex, densely reticulate, including clypeus which is laterally delimited by broad depressions and has distinctly produced lower margin; oral margin forming a lobe on either side of clypeus, mesad of distinct malar depressions; mandibles stout, with teeth 3 : 4; antennae in both sexes with segments 13 : 1.1.3.5.3; in female the annelli extremely short; in male the third annellus broader than the rest; scape slightly exceeding vertex; funicular segments stout-fusiform, much thicker than short pedicel, subequal; club short, subacuminate; throax short, densely reticulate; collar well developed, bluntly carinate; scutum very short; parapsidal furrows complete,

deep, straight; scutellum very slightly transverse, front margin broad, frenal groove distinct, shallow; propodeum narrowing into a distinct nucha, the latter short and conically receding to the petiole, spiracles elongate, postspiracular depression short and deep towards the narrow emarginate supracoxal flange; prepectus small with deep triangular depression; fore wing with vein *m* expanded and with parallel margins, not longer than vein *st,* which latter is only moderately knobbed, vein *pm* much longer than vein *m*; petiole dorsally cylindrical, longer than thick, ventrally embracing; abdomen short, lanceolate; margins of tergites almost straight; first tergite longest, subtriangular, with large basal fovea; second tergite also large.

Type-species : Pachycrepis orientalis Crawford.

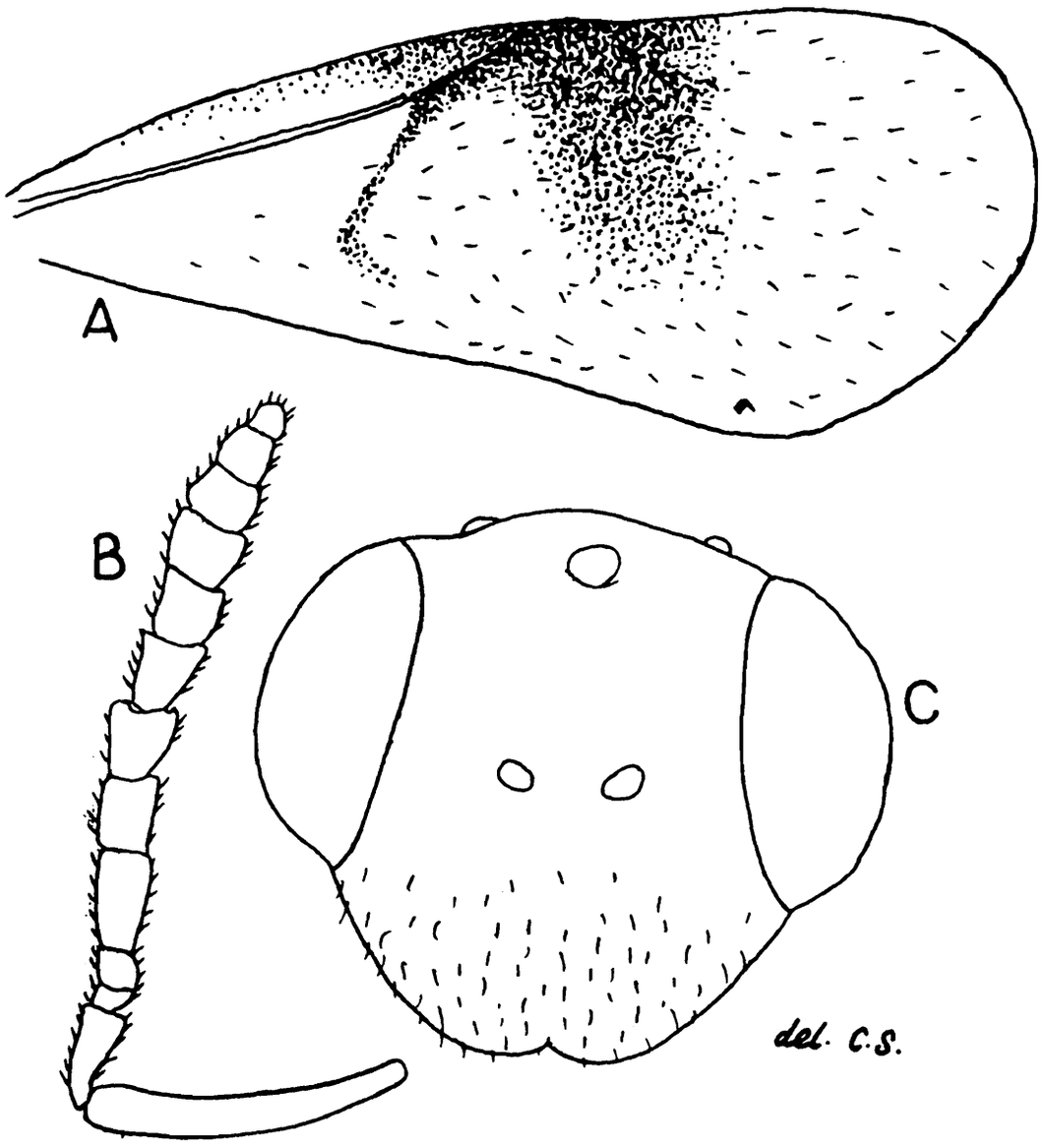

FIG. 143. *Metacolus beesoni* (Mani & Kaul), female : A. Fore wing; B. Antenna; C. Head in front view.

Oricoruna coorgensis (Mani & Kurian)

1953 *Pachycrepoideus coorgensis,* Mani & Kurian, *Indian J. Ent.,* 15 (1) : 10.
1953 *Pachycrepoideus arcotensis,* Mani & Kurian, *Indian J. Ent.,* 15 (1) : 11.
1978 *Oricoruna arcotensis,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 449.

Female : Length 1.50-2.00 mm. Body black; antennae brown, except the black coxae legs brown.

Head moderately pubescent, wider than prothorax; head viewed from above transverse, nearly 2.50 times as wide as long; vertex distinctly but shallowly punctate, sparsely pubescent; ocellocular space equal to interocellar space, slightly more than 2 times front ocellar space; vertex sinuately margined behind; occiput excavate, dull rugoso-striate; head viewed from front nearly triangular, face convex, finely reticulate; antennae inserted slightly above the middle of face; antennal sockets separated by about 0.33 of the distance from eyes; eyes oval, naked; scrobes shallow; inner orbital borders parallel; clypeus obscurely longitudinally elevated in the middle, dentately produced in front, strongly margined; postorbital space equal to the width of head; genal space about 0.25 of the height of head; mandible with 3 teeth on left and 4 teeth on right; third and fourth teeth smaller than the first; antennal segments 13 : 1.1.3.5.3; scape slender, long and reaching the front ocellus and more than 2 times as long as thick; pedicel about 0.50 of the first funicular segment and as long as its own thickness at apex; annelli 0.60 of the pedicel; third annellus somewhat larger than the rest; funicular segments gradually becoming smaller towards apex; first funicular segment somewhat less than 1.50 times second; club slightly shorter than the preceding 3 segments combined and about 0.80 of scape; pronotum narrow, transverse, closely finely punctate; mesonotum closely and somewhat more coarsely punctate than pronotum; parapsidal furrows deep and complete; axillae not contiguous; scutellum convex, closely finely reticulate-punctate; propodeum finely obscurely punctate, without median longitudinal carina; fore wing about 2 times as long as wide; vein *sm* broken distad; veins *m* : *pm* : *st* ratio 100 : 125 : 100; hind coxae largely impunctate; hind tibial spur somewhat more than 0.50 of metatarsus; abdomen subequal to thorax; first tergite largest; conspicuously smooth; other tergites telescoped; ovipositor not exserted; petiole equal to propodeum.

Male : Length 1.40 mm. Body brownish-black, except for the yellowish-brown coxae; legs pale yellow.

Head viewed above about 1.30 times as wide as thorax, about 2.50 times as wide as long, sparsely pubescent; vertex shallowly punctate, sparsely pubescent; ocellocular space about 0.75 of interocellar space and about 2.50 times front ocellar space; vertex striately margined behind; occiput dull, excavate and irregularly rugoso-striate; head viewed from front ovate-triangular; face convex

finely reticulately-leathery, with a faint greenish-metallic lustre; antennae inserted slightly above the middle of face; eyes brown, oval, naked; inner orbital borders parallel; clypeus obscurely longitudinally elevated in the middle, dentately produced and strongly margined in front; head viewed from side genal space slightly more 0.25 of the height of eye; antenne with 13 segments : 1.1.3.5.3; scape a little less than 6 times as long as thick and about 3.50 times the pedicel; pedicel about 0.80 of first funicular segment; first 2 annelli narrow; third annellus much larger and as long as the first 2 combined; funicular segments subequal, except for the last which is somewhat shorter; club somewhat shorter than preceding 3 segments combined and more than 0.80 of the scape; pronotum transversely rugoso-striate; mesonotum closely and more coarsely punctate than pronotum; parapsidal furrows complete, but not deep; axillae not contiguous; scutellum punctate like mesonotum; propodeum medially raised, rugoso-striate in the middle and faintly rugosopunctate at sides, with 2 lateral carinae converging behind; spiracular sulci shallow; wings as in female; hind coxae mostly impunctate; tibial spur nearly equal to metatarsus; abdomen slightly shorter than thorax; first tergite largest; petiole nearly 0.50 of the propodeum.

Type locality : Bangalore

Distribution : North Arcot

Host : Some Diptera attacking *Icerya aegyptiaca* on various plants.

Pachycrepoideus Ashmead

1904 *Pachycrepoideus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 329.
1909 *Pachycrepoideus,* Schmiedeknecht, *Gen. Ins.,* 97 : 372.
1952 *Pachycrepoideus,* Nikolskaya, *Chalcid fauna USSR,* 242.
1954 *Anisopteromalia,* Boucek, *Acta Ent. Mus. Nat. Pragae,* 29 : 57.
1955 *Pachycrepoideus,* Delucchi, *Z. angew. Ent.,* 38 : 141.
1956 *Pachycrepoideus,* Boucek, *Casopis Czeskoslov. Spolec. Ent.,* 53 : 165.
1963 *Pachycrepoideus,* Peck, *Canad. Ent.,* 30 : 620.
1964 *Pachycrepoideus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 39.
1969 *Pachycrepoideus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 846.
1979 *Pachycrepoideus,* Krombein *et al., Hymen. N. America,* 1 : 797.

This genus resembles *Pachycrepis* but vein *st* ends in a small knob, abdomen ovate, tergite 2-3 large, tergites 4-5 very short, tergites 6-7 longer; antennae inserted on level of lower orbital borders; pronotal collar not margined; parapsidal furrows sometimes complete; in female antennal segments 13 : 1.1.3.5.3; gena with acute edge; in male 12 : 1.1.2.6.2; vein *pm* longer than *st, m* thickened the whole length.

Type-species : (Pachycrepoides dubius Ashmead) *Pachycrepoideus vindemmiae* (Rondani)

Pachycrepoideus vindemmiae (Rondani)

1875 *Pteromalus vindemmiae,* Rondani, *Bol. Com. Agr. Parmense,* 8 : 3.
1875 *Encyrtus vindemmiae,* Rondani, *Bol. Com. Agr. Parmense,* 8 : 145.
1876 *Pteromalus vindemmiae,* Rondani, *Bol. Soc. ent. Ital.,* 8 : 84.
1904 *Pachycrepoideus dubius,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 329.
1909 *Pachycrepoideus dubius,* Schmiedeknecht, *Gen. Ins.,* 97 : 372.
1954 *Anisopteromalia crassinervis,* Boucek, *Acta Ent. Mus. Natl. Pragae,* 29 : 57.
1956 *Pachycrepoideus elongata,* Delucchi, *Z. angew. Ent.,* 38 : 141.
1956 *Pachycrepoideus vindemmiae,* Delucchi, *Z. angew. Ent.,* 38 : 139.
1960 *Pachycrepoideus vindemmiae,* de Santis, *Rev. Fac. Agr. La Plata,* (3) 36 (2) : 116.
1963 *Pachycrepoideus vindemmiae,* Peck, *Canad. Ent.,* 30 : 620.
1966 *Pachycrepoideus vindemmiae,* Baltazar, *Pacif. Ins. Monogr.,* 8 : 139.
1969 *Pachycrepoideus vindemmiae,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 846.
1978 *Pachycrepoideus vindemmiae,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 450.
1979 *Pachycrepoideus vindemmiae,* Krombein *et al.,* Hymen. N. America, 1 : 797.

Female : Length 1.00-2.30 mm. The following is reproduced from Rondani :

"Corpus nigro-nitens, abdomine levigatissimo, leviter submetallicum, minutissimum.

Antennae prope os insitae, sub-nudae, scapo rufescente, altitudine capitis non longiore; flagello nigricante, articulis apparentibus novem instructo, secundo satis parvo, caeteris brevibus sub-aequalibus etiam carssitie.

Alae hyalinae sub-decoleres, non fibricateae; superae paulo longiores abdomine : vena marginali costam attingente ante medium, et in eadem breviter decurrente, et ibi distincte incrassata, appendiculam ordinariam emittente, longiusculam, obliquam, apici dilatatam, et sub-bifidam.

Pedes fulvescentis, femoribus aliquando paulo fuscis; tibiis apici spinulis duabus parvis instructis, tarsis quinque articulatis, articulis tribus intermediis minoribus."

Type locality : California

Distribution : Cosmopolitan

Hosts : Anastrepha sp., *Calliphora* sp., *Ceratitis capitata* (Wied.), *Drosophila melanogaster* Meig., *Fannia canicularis* (Linn.), *F. scalaris* (F.), *Haematobia irritans* (Linn.), *Hylemya brassicae* (Boucek), *Lucilia illustris* (Meig.), *Musca domestica* Linn. *Phaenicia sericata* (Meig.), *Phormia regina* (Meig.), *Piophila casei* (Linn.), *Rhagoletis* sp., *R. fausta* (O.S.), *Stomoxys calcitrans* (Linn.), *Orseolia oryzae.*

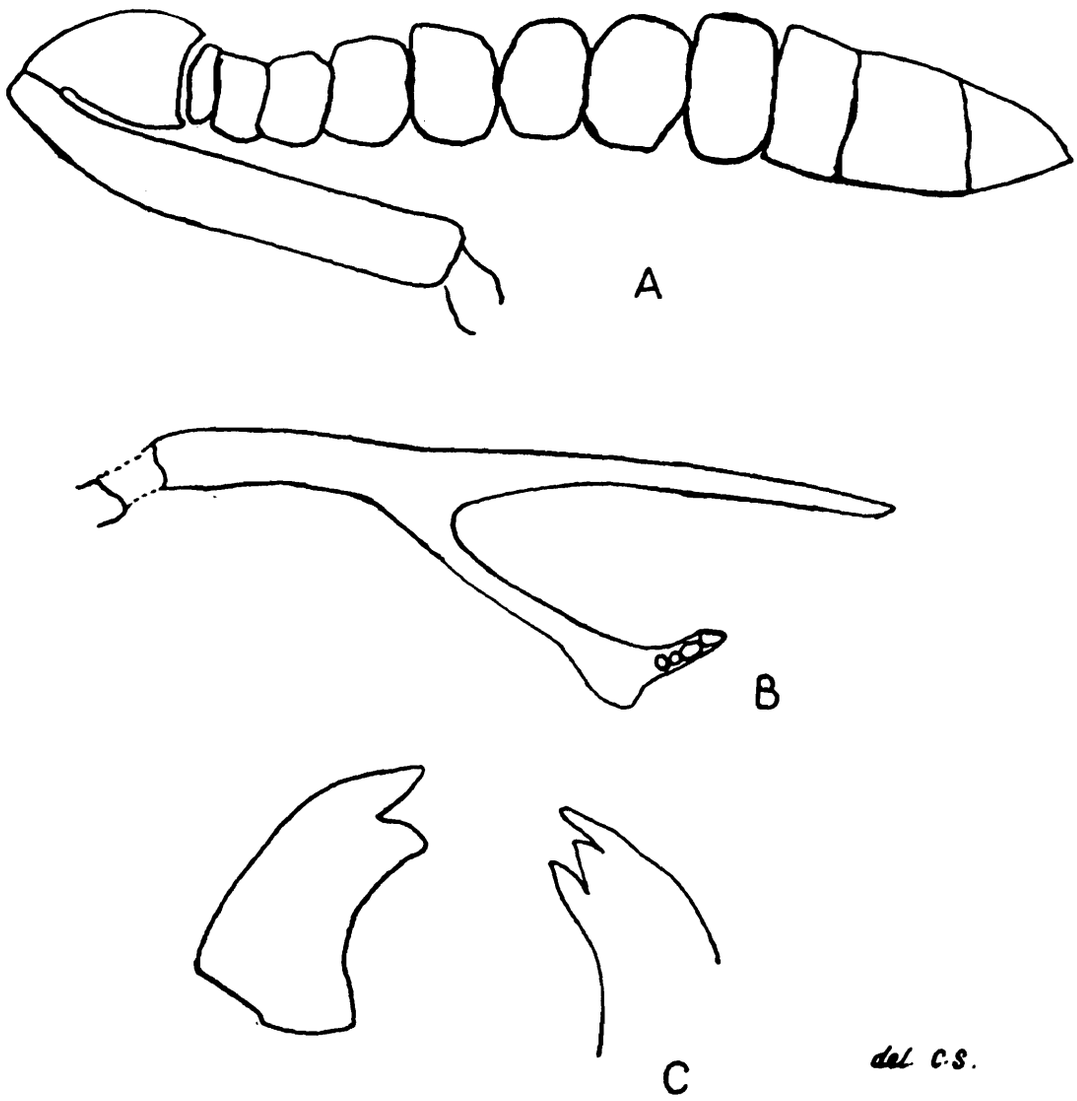

FIG. 144. *Pachycrepoideus indicus* Bhatnagar, female : A. Angenna; B. Stigmal area of fore wing; C. Mandible.

Pachycrepoideus indicus Bhatnagar

1951 *Pachycrepoideus indicus,* Bhatnagar, *Indian J. agric. Sci.,* 21 (2) : 160.

Female : Length 1.80 mm. Body generally black; antennae brown; tegulae black; wings hyaline; veins light brown; legs except the 3 coxae, which are black, light yellowish-brown.

Head wider than prothorax, equal to the distance between tegulae; viewed from above rectangular, 2 times as wide as long; vertex shallowly and sparsely punctate, setose; interorbital space 0.50 of the width of head, ocellocular space 0.67 of interocellar and equal to the front ocellar space; occiput dull and very slightly concave; viewed in front oval; above the insertion of the antennae face smooth and polished, below closely and shallowly punctate with long villous setae; antennae inserted far below the middle of face; distance

between antennal sockets equal to distance between the socket and eyes; eyes circular and naked; frons excavated; gena 0.50 of the interorbital length; viewed from side postorbital space 0.20 of the width; genal space 0.33 of the height; 2 times as high as thick; mandibles left bi- and right tridentate, first tooth large and acute; antennae with 13 segments; 1.1.1.7.3; scape slender, long and just reaching the front ocellus, more than 6 times as long as thick; annellus only slightly shorter than the first funicular segment; funicular segments gradually increasing in size, last 3 times as long as the first; club triarticulate and equal to the preceding 3 funicular segments, about 0.67 of scape.

Thorax with pronotum towards the sides closely regulosely punctate, in the middle somewhat smooth and shiny; large, quadrate mesonotum more closely punctate than pronotum, dull; parapsidal furrows deep and complete; mesopleurae with a shallow femoral impression, obscurely shallowly punctate but mostly smooth and shiny; axillae triangular and not meeting in the middle; scutellum slightly convex and smooth; propodeum rugulose, strongly punctate with a median carina; wings approximately 3 times as long as broad with discal ciliation moderately dense towards apex; vein *sm* broken distad with a few discal ciliation; vein *m* equal to *st* and 0.75 of *pm;* hind coxae largely impunctate, single hind tibial spur straminous and 0.50 of metatarsus.

Abdomen equal to thorax, first and second tergites equal, conspicuously large and smooth rest of tergites reduced; ovipositor sheath concealed; petiole well developed and equal to propodeum.

Type locality : Chaubattia

Host : Aphis helichrysi

Pachyneuron Walker

1833 *Pachyneuron,* Walker, *Ent. Mag.,* 1 : 371, 380.
1840 *Pachyneuron,* Blanchard, *Ins. Hist. Nat. Anim. Artic.,* 3 : 260, 266.
1846 *Pachyneuron,* Agassiz, *Nomencl. Zool.,* 778.
1856 *Pachyneuron,* Förster, *Hym. Stud.,* 2 : 52, 54.
1878 *Pachyneuron,* Thomson, *Hym. Scand.,* 5 : 18, 27.
1904 *Pachyneuron,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 329.
1909 *Pachyneuron,* Schmiedeknecht, *Gen. Ins.,* 97 : 371, 372, 373.
1913 *Serimus,* Bréthès, *An. Buenos Aires Mus. Nac. de Hist. Nat.,* 24 : 90.
1917 *Propachyneuronia,* Girault, *Psyche,* 24 : 102.
1917 *Neopachyneuron,* Girault, *Descr. Hym. Chalcidoidea, Variorum cum Observe.,* 5 : 9.
1942 *Pachyneuron,* Szelenyi, *Zentbl. ges. Forstw.,* 68 : 93.
1952 *Pachyneuron,* Nikolskaya, *Chalcid fauna USSR,* 247.
1956 *Pachyneuron,* Delucchi, *Z. angew. Ent.,* 38 (2) : 141.
1956 *Atrichoptilus,* Delucchi, *Z. angew. Ent.,* 38 (2) : 141.
1957 *Pachyneuron,* de Santis, *Notes del Mus. Univ. Nac. de La Plata,* 19 : 118.

1963 *Pachyneuron,* Peck, *Canad. Ent.,* 30 : 612.
1964 *Pachyneuron,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 39.
1965 *Pachyneuron,* Boucek, *Acta ent. Mus. Nat. Pragae,* 11 : 16-18.
1969 *Pachyneuron,* Graham, *Bull. Brit. Mus. nat. Hist.* (Ent.) Suppl., 16 : 830.
1979 *Pachyneuron,* Krombein *et al.,* Hymen. N. America, 1 : 795.

Antennae inserted slightly above the level of lower orbital borders; with segments 13 : 1.1.2.6.3 (sometimes also 1.1.3.5.3); clypeus obtusely produced; pronotal collar margined; parapsidal furrows incomplete, indicated only anteriorly; vein *m* thickened, short; *pm* equal to or usually slightly longer than *sm;* gena acute below; speculum present; first tergite not longer than wide; abdomen flat above.

Type-species : Pachyneuron formosum Walker

KEY TO SPECIES

1. Fore wing with apical marginal fringe; vein *pm* between 1.50 and 2 times *st,* vein *m* about 2.70-4.00 times as long as thick; pronotal collar usually margined	2
Fore wing without apical marginal fringe; vein *pm* a little longer than *st,* vein *m* hardly 1.20 times as long as thick; pronotal collar not always acutely margined	5
2. Annelli 3, funicular segments 5	*Pachyneuron aphidis* (Bouché)
Annelli 2, funicular segments 6	3
3. Vein *m* shorter than *st,* vein *pm* a litle less than 1.50 times of *st*	*Pachyneuron leucopiscida* Mani
Vein *m* longer than *st*	4
4. Scutellar frenum present, though faint; petiole about 2 times as long as thick; first funicular segment subequal to pedicel	*Pachyneuron groenlandicum* Holmgren
Scutellar frenum absent; petiole hardly 1.60 times as long as thick; first funicular segment not subequal to pedicel	*Pachyneuron chambaensis* Mani & Saraswat
5. Funicular segments subquadrate; vein *pm* distinctly longer than *st;* vein *m* about 2.33 times as long as thick	*Pachyneuron aeneum* Masi
Funicular segments distinctly longer than thick; vein *pm* much longer than *st;* vein *m* about 3.50 times as long as thick	*Pachyneuron ahlaense* Mani & Saraswat

Pachyneuron aphidis (Bouché)

(Fig. 145 & 146)

1834 *Diplolepis aphidis,* Bouché, *Nat. Ins.,* 5 : 170.
1939 *Pachyneuron lali,* Mani, *Indian J. Ent.,* 1 (1 & 2) : 81.
1939 *Pachyneuron ferrierei,* Mani, *Indian J. Ent.,* 1 (1 & 2) : 83.
1974 *Pachyneuron triarticulata,* Mani & Saraswat, *Mem. School Ent.,* 3 : 98.
1978 *Pachyneuron aphidis,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 451.

Male : Length 0.75-1.40 mm. Body non-metallic, dark brown; scape brownish, not concolorous with the rest of body, rest of antenna dark brown; veins dark brown; femora dark brown, except bases and apices; femora and tibia white except apical segments tarsi, bases and apices.

Clypeus obtusely produced in the middle; mandibles with 3 teeth on left and 4 on right side; gena compressed and acute below; antennal segments in female 13 : 1.1.3.5.3; clavate; first and second funicular segments short, subequal; third and fourth segments each about 1.50 times the length of first; fifth somewhat shorter; sixth slightly longer; club slightly shorter than the preceding 3 segments combined; first segment of club short, second long, third short and conical; thorax strongly arched; pronotal collar margined; vein *st* slightly longer than *m,* vein *m* 2.70-3.00 times as long as thick, thicker apically than basally; vein *pm* 2 times longer than *st;* petiole smooth, shorter than hind coxa, nearly as long as thick; abdomen short, wide.

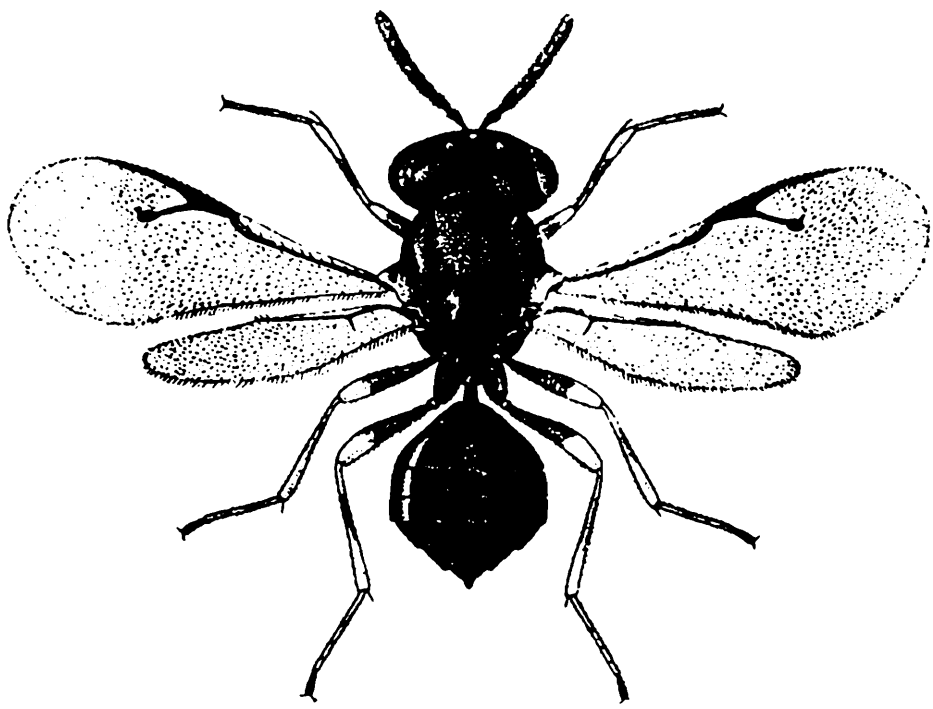

FIG. 145. *Pachyneuron aphidis* (Bouché), female.

Female : Length 1.76-1.80 mm. Body very dark brown to black, with dark metallic-blue, greenish or violet reflections; head black with dark blue reflections on vertex, orbital border, genae, clypeus and frons with greenish reflections; antenna dull brown, scape and pedicel with blue reflections; legs dark brown, coxae, trochanters, distal 0.75 of femora, distally middle portion of mid and hind tibiae and last tarsus are concolorous to body, otherwise legs yellowish; wings hyaline, veins very dark brown.

Head viewed in front length to width 75 : 100, finely reticulate; clypeus with fine longitudinal striations, median lobe convexly pointed in front; ocellocular space equal to 2.50 times ocellar diameter, front ocellar space equal to ocellar diameter; mandibular teeth 4; antennal segments 13 : 1.1.3.5.3; scape cylindrical with fine reticulate microsculpture, 5 times longer than thick; pedicel 1.50 times as long as thick and about 0.33 of scape; first annellus 4 times as thick as long, second almost 3 times as thick as long, third about 2.25 times thicker than long; first funicular segment as long as thick, second 1.10 times as long as thick, third 1.20 times as long as thick, fourth and fifth slightly longer than thick; club slightly less than 3 times longer than thick and equal to the preceding 3 funicular segments combinded, first segment almost as long as thick, second slightly shorter than thick, third slightly longer than thick with a conical process at tip.

Thorax reticulate; propodeum without median carina, very finely reticulate; fore wing with marginal fringe, length to width 100 : 50, vein *m* 2.66 times as long as wide, veins *sm* : *m* : *pm* : *st* ratio 325 : 100 : 213 : 125; hind wing with marginal fringe, hind to fore wing length 75-82 : 100; fore coxa about 2.20 times as long as thick, finely transversely reticulate; femur almost 5 times longer than thick and 1.50 times coxa, finely reticulate; tibia equal to femur, 7.50 times longer than thick; tarsus equal to tibia, metatarsus 0.25 of tibia and tarsus, with 12-13 stout spines below, second segment 0.75 of metatarsus, third very slightly shorter than the second, fourth about 0.50 of metatarsus and very slightly shorter than the third, fifth equal to metatarsus and 2 times the fourth; middle coxa 1.25 times as long as thick, with 2 short setae above, finely transversely reticulate; femur 5.60 times longer than thick and about 2.50 times coxa, with fine reticulate microsculpture; tibia slightly more than 9 times as long as thick and 1.20 times femur, tibial spur 0.75 of metatarsus; tarsus to tibia 9 : 10, metatarsus 0.25 of tibia and slightly longer than 0.25 of tarsus, with 7 stout spines below, second segment slightly less than 0.75 of metatarsus, third very slightly shorter than the second, fourth 0.75 of the second and very slightly shorter than the third, fifth slightly longer than the second and almost equal to tibial spur; hind coxa 2 times as long as thick, finely transversely reticulate, with one very long, 4 long and 4 short setae; femur 4.50 times longer than thick and a little less than 2 times coxa, with fine reticulate microsculpture; tibia about 1.10 times femur, very slightly more than 2 times coxa, about 8 times as long as thick, spur about 0.50 of metatarsus; tarsus a little shorter than tibia, almost equal to mid tarsus and its segments are also in the same proportions; metatarsus with 7-8 stout spines below.

Petiole broader at apex than basally and 2 times as thick as long, 0.07 of abdomen; abdomen including petiole 0.50 of body; ovipositor a little exserted, with fine microsculpture.

Type locality : Europe

Distribution : Europe; India : Northwest Himalaya; Kumaon-Garhwal Himalaya

Host : Aneuraphis helichrysi (Kalt.) on *Prunus* in India; other aphids *Myzus persicae* Sulz., *Brevicoryne brassicae* (L.), *Toxoptera aurantii* Fonsc., Aphidiinae parasitic on various aphids.

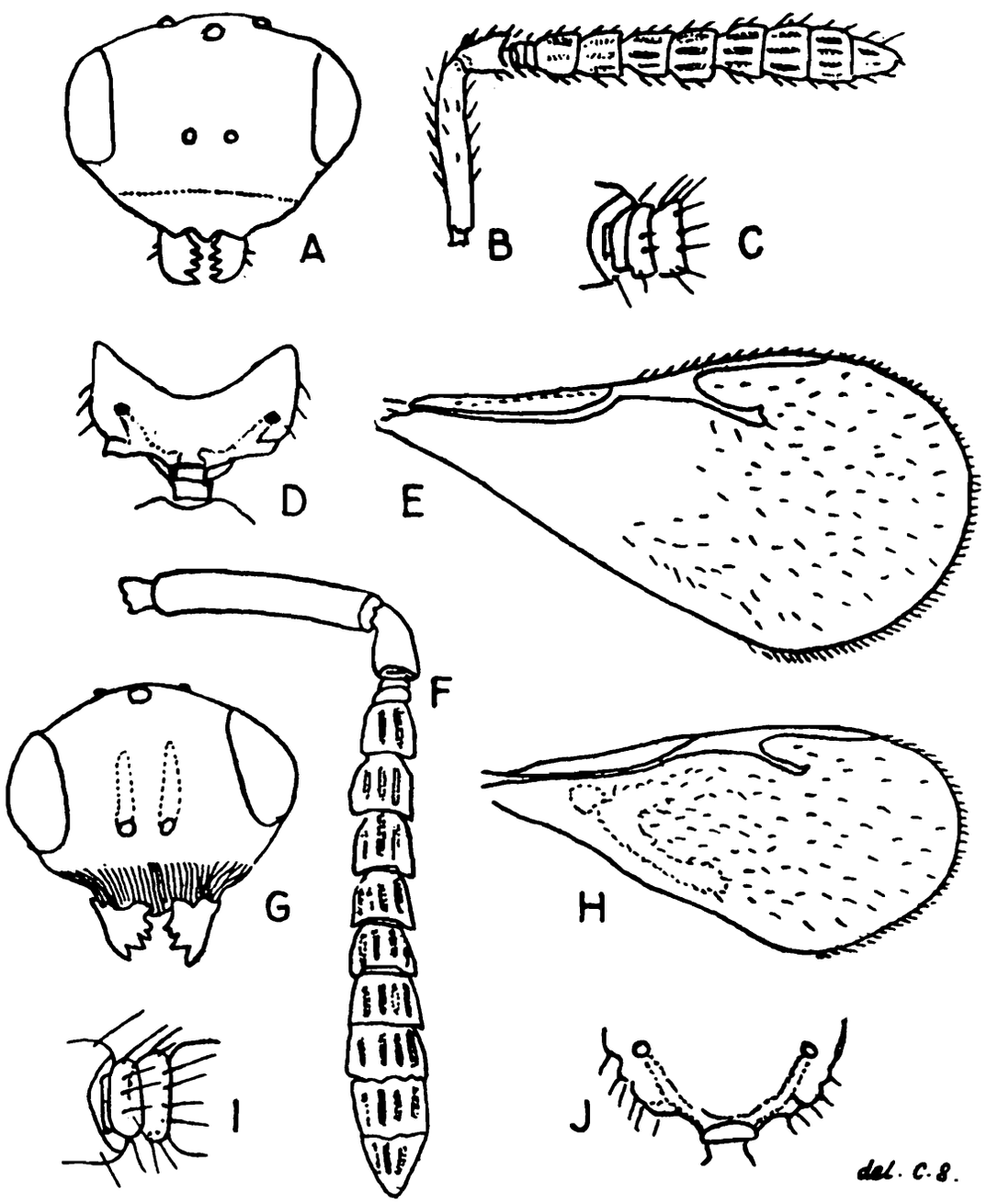

FIG. 146. A-E. *Pachyneuron aphidis* (Bouché), female : A. Head; B. Antenna; C. Annellus; D. Propodeum; E. Fore wing, F-J. *Pachyneuron chambaensis* Mani & Saraswat, female; F. Antenna; G. Head; H. Fore wing; I Annellus; J. Propodeum.

Pachyneuron leucopiscida Mani

1939 *Pachyneuron leucopiscida,* Mani, *Indian J. Ent.*, 1 (1 & 2) : 18.
1953 *Pachyneuron cremifaniae,* Delucchi, *Bull. Inst. R. Sci. Nat. Belge,* 29 : 86.
1955 *Pachyneuron cremifaniae,* Delucchi, *Z. angew. Ent.*, 38 : 127, 131.
1969 *Pachyneuron cremifaniae,* Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 838.
1978 *Pachyneuron leucopiscida,* Boucek, Subba Rao & Farooqi, *Orient. Ins.*, 12 (4) : 453.

Female : Length 1.40 mm. Body very dark metallic-blue, with brassy or coppery tints; face dark green; vertex darker; scape light brown below and darker above; flagellum very dark brown, moderately densely pubescent; pedicel shiny, dark brown; all coxae concolorous with thorax, basal 0.33 of femora reddish-brown, except for the darker apical tarsal segment, rest of legs honey-yellow; veins brownish.

Head not very thin mesad; occipital line very slightly curved at vertex, not angulated; vertex a little over 3 times as wide as thick, somewhat wider than thorax; face convex, broader than long, reticulate with converging striae rather fine near mouth; somewhat depressed medially; clypeal margin with a moderately large, deep, semi-circular emargination and with a blunt median tooth; mandibles normal, right 4 dentate, left 3 dentate, teeth equal; interocellar space 2 times the ocellocular; antennae inserted just above level of lower orbital border; sockets at a distance greater than their diameters; scape reaching front ocellus; annelli 2; except the somewhat shorter first funicular segment, others subequal, nearly as long as thick.

Pronotum not very much narrowed in front, nearly as wide at shoulder as anterior margin of mesonotum; mesonotum slightly depressed mesocauded, finely reticulate; parapsidal furrows deep, distinct, incomplete; propodeum with sculpture like the rest of thorax; anterior margin of axillae nearly straight; scutellum pyriform, broadest before apex, somewhat abruptly declivous cauded, without frenum, reticulations in the caudal area somewhat larger than elsewhere; propodeum large, non-carinate, not prominently produced behind, with well developed spiracular sulci and submedian fovea subcephalad; fore wing with vein *st* much longer than *m;* vein *pm* a little less than 1.50 times the *st;* vein *sm* distinctly broken distad just before uniting with *m.*

Abdomen subfusiform, first tergite occupies nearly 0.50 of total dorsal area; petiole longer than hind coxae, also much longer than thick.

Male : Very similar to female but somewhat larger, generally more depressed; scape and legs somewhat lighter; flagellum somewhat more slender; abdomen shorter, broader, elongated spatulate, subtruncate cauded.

Type locality : Coimbatore

Distribution S. India, Europe

Host *Leucopis nigricornis,* on *Zea mays, Sorghum vulgare, Gossypium spp.* etc., *Cremifania nigrocellulata* Cz. feeding on coccids.

This species has a general resemblence to *P. eros* Girault, recorded as having been bred from the same host in the Philippines, but differs in its smaller size, metallic colour of body, in the relatively much longer vein *pm,* interspace of scapal sockets being greater than the diameter of sockets, sculptured propodeum and differently coloured legs. Cherian bred a hyperparasite *Perissopterus cheriani* Mani (*Vide infra*), which parasites the larva of *Pachyneuron leucopiscida.*

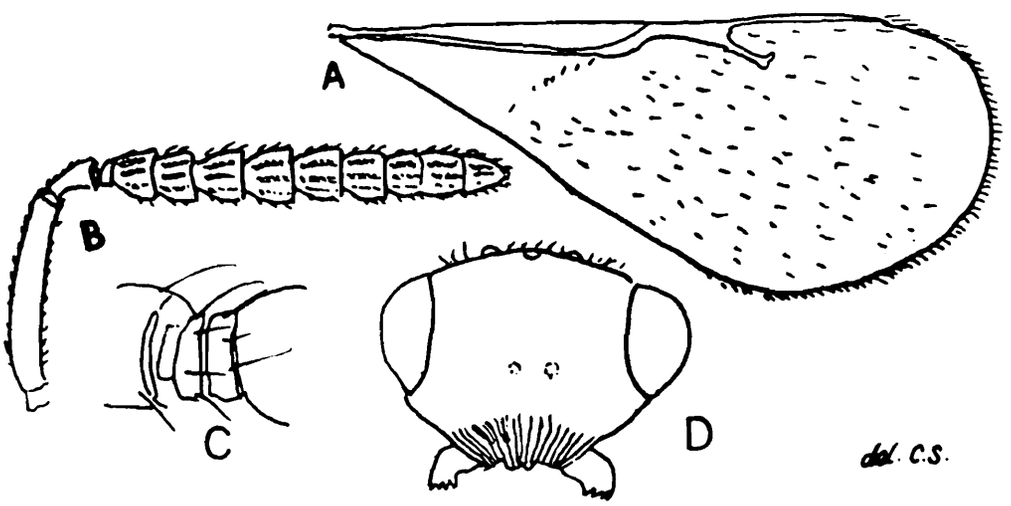

FIG. 147. *Pachyneuron groendandicum* Holmgren, female : A. Fore wing; B. Antenna; C. Annellus; D. Head.

Pachyneuron groenlandicum Holmgren

(Fig. 147)

1872 *Pachyneuron groenlandicum,* Holmgren, *Ofv. kgl. Vet. Akad. Forh.,* 29 : 100.

1939 *Pachyneuron karnalensis,* Mani, *Indian J. Ent.,* 1 : 17.

1974 *Pachyneuron bakrotus,* Mani & Saraswat, *Mem. School Ent.,* 3 : 102.

1978 *Pachyneuron groenlandicum,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 452.

Female : Length 1.50-2.60 mm. Body black with metallic-blue, dark blue-green reflections; head black with dark blue and violet reflections on vertex, greenish on frons, bluish-green and violet reflections on clypeus; antenna brown to dark brown; scape brownish or yellow; legs pale yellowish-brown, coxae concolorous to body, last tarsal segments brown, coxae concolorous to body, last tarsal segments brown; wings hyaline, veins brown.

Head viewed in front length to width 73 : 100, wider than thorax, reticulate; clypeus with fine longitudinal striations, median lobe indistinctly incised or truncate in front; ocellocular space equal to interocellar and very slightly more than 3 ocellar diameters, front ocellar space almost equal to ocellar diameter; mandibular teeth 4; toruli separated by a distance greater than their diameter; antenna with 13 segments; 1.1.2.6.3; scape slender, long, cylindrical with reticulate microsculpture, 8 times longer than thick; pedicel 1.50 times as long as thick and about 0.25 of scape; first annellus 2.66 times thicker than long, second 2.25 times as thick as long; funicular segment one and 6 as long as thick, subequal to pedicel; segments 2-5 subequal, very slightly longer than thick; club about 3 times longer than thick and very slightly less than preceding 3 funicular segments combined, first segment slightly thicker than long, second as long as thick and third about 1.20 times longer than thick with an obtuse process at tip.

Thorax finely reticulate, porpodeum with a faint, elongate, inverted Y-shaped median carina; scutellum with a faint frenum, with larger reticulation behind; fore wing with marginal fringe, fore wing length to width 100 : 47, vein *m* 4.40 times as long as wide, veins *sm : m : pm : st* ratio 350 : 100 : 180 : 90; hind wing with marginal fringe, hind to fore wing length 80 : 100; fore coxa about 1.70 times as long as thick, finely transversely reticulate; femur 3.80 times as long as thick and 1.70 times coxa, with fine reticulate microsculpture; tibia equal to femur and slightly more than 6 times as long as thick; tarsus slightly shorter than tibia, metatarsus 0.25 of tibia and very slightly more than 0.25 of tarsus, with 8-9 stout spines below, second segment very slightly more than 0.75 of metatarsus, third 0.50 of metatarsus and slightly less than the third and 0.50 of the second, fifth equal to third and fourth segments combined and almost equal to metatarsus; middle coxa 1.30 times as long as thick, finely transversely reticulate; femur about 6.30 times longer than thick and about 2.80 times coxa, with fine reticulate microsculpture; tibia 9 times as long as thick and 1.20 times femur, tibial spur 0.66 metatarsus; tarsus equal to femur, tarsus to tibia 9 : 11; metatarsus to tibia about 3 : 11 and slightly more than 0.33 of tarsus, with 8 stout spines below, second segment 0.66 of metatarsus, third about 0.50 of metatarsus and slightly less than 0.75 of the second, fourth almost 0.50 of the second and slightly shorter than the third, fifth equal to the second; hind coxa 1.80 times longer than thick, finely transversely reticulate, with 3 shorter bristles respectively at base and subapically and 4 times longer bristles in the middle; femur about 5 times longer than thick and 1.80 times coxa, with fine reticulate microsculpture; tibia almost 2 times coxa and 1.15 times femur, 8 times as long as thick, spur very slightly less than 0.50 of metatarsus; tarsus slightly longer than femur and equal to mid tibia, tarsus to tibia 9 : 10, metatarsus 0.33 of tarsus, with 13 stout spines below,

second segment 0.66 of metatarsus, third 0.66 of the second, fourth 0.50 of the second and 0.75 of the third, fifth equal to the second.

Petiole 1.33-2.00 times longer than thick and about 0.20 of abdomen; abdomen including petiole almost 0.50 of body; ovipositor a little exserted.

Type locality : Europe

Distribution : Europe; India : Northwest Himalaya; Punjab.

Host : Syrphus sp. attacking aphis on wheat.

Pachyneuron chambaensis Mani & Saraswat

(Fig. 146)

1974 *Pachyneuron chambaensis,* Mani & Saraswat, *Mem. School Ent.,* 3 : 100.
1974 *Pachyneuron jandrighatensis,* Mani & Saraswat, *Mem. School Ent.,* 3 : 104.
1978 *Pachyneuron chambaensis,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 452.

Female : Length 1.88-2.50 mm. Body very dark brown to black with metallic-blue-green reflections; head black with blue and green reflections on vertex, frons with green reflections, clypeus with blue and green, gena and lower orbital border with violet reflections; antenna dark brown; legs dark brown, coxae, trochanters, femora and last tarsi, mid and hind tibiae dark brown, rest of legs brownish; wings hyaline, veins dark brown.

Head viewed in front length to width 77 : 100, finely reticulate; clypeus with fine longitudinal striations, median lobe slightly convex or truncate in front; ocellocular space equal to 3 ocellar diameters, front ocellar space subequal to ocellar diameter; mandibular teeth 4; antennal segments 13 : 1.1.2.6.3; scape long, cylindrical with reticulate microsculpture, slightly more than 5 times as long as thick; pedicel 1.50 times longer than thick and about 0.33 of scape; first annellus 2.66 times thicker than long, second 2.50 times as thick as long; first and fifth funicular segments almost as long as thick, segments 2-4 subequal, about 1.13 times longer than thick; sixth 1.14 times as thick as long; club very slightly thicker than funicule, about 3 times as long as thick, equal to preceding 3.50 funicular segments combined, first segment 1.12 times as thick as long, second 1.20 times as thick as long, third as long as thick.

Thorax finely reticulate, scutellum without frenum, propodeum without carina, larger reticulation in the front part of scutellum; fore wing with marginal fringe, length to width 100 : 47, vein *m* about 4 times as long as wide, veins *sm* : *m* : *pm* : *st* ratio about 290 : 100 : 170 : 90; hind wing with marginal fringe, hind wing to fore wing length 83 : 100; fore coxa 2 times as long as thick, finely transversely reticulate; femur 4.50 times as long as thick and about 1.50 times coxa, with fine reticulate microsculpture; tibia only very

slightly shorter than femur, slightly more than 6 times longer than thick; tarsus very slightly shorter than tibia, metatarsus 0.25 of tarsus with 12 stout spines below, second segment very slightly shorter than metatarsus, second segment to metatarsus 9 : 10, third segment very slightly less than 0.75 of metatarsus and about 0.75 of the second, fourth very slightly shorter than the third and about 0.50 of metatarsus, fifth equal to the second; middle coxa 1.13 times as long as thick, finely transversely reticulate with about 7 long setae; femur about 6 times longer than thick and about 2.70 times coxa, with fine reticulate microsculpture; tibia about 1.20 times femur and almost 9 times as long as thick; tibial spur only very slightly shorter than metatarsus; tarsus slightly shorter than femur, tarsus to tibia 4 : 5, metatarsus almost 0.25 of tarsus and about 0.20 of tibia with 11 spines below, second segment slightly shorter than metatarsus, third slightly shorter than the second and very slightly less than 0.75 of metatarsus; fourth about 0.75 of the third, fifth equal to metatarsus; hind coxa 2.14 times as long as thick, finely transversely reticulate, with 7 times long, 3 medium and several short setae; femur about 4.33 times longer than thick and about 1.70 times coxa, with fine reticulate microsculpture; tibia about 1.20 times femur and a little longer than 2 times coxa, spur almost 0.50 of metatarsus; tarsus a little longer than femur, tarsus to tibia 7 : 8, metatarsus slightly less than 0.33 of tarsus and almost 0.25 of tibia, with 14-15 spines below, second segment slightly less than 0.75 of metatarsus, third about 0.75 of the second, fourth very slightly more than 0.75 of the third and about 0.50 of the second, fifth almost equal to the second.

Petiole shiny with fine reticulate microsculpture, 1.66 times longer than thick, abdomen 5.30 times petiole, abdomen including petiole almost 0.50 of body, shiny; ovipositor slightly exserted.

Type locality : Himalaya : Dalhousie

This species differs from *P. planiscuta* Thomson in *m* 1.14 times as long as thick *st* much shorter; differs from *P. solitarium* (Hartig.) in clypeus convex in front; scape 5 times as long as thick; scutellum without frenum; propodeum without carina.

Pachyneuron aeneum Masi

(Fig. 148)

1929 *Pachyneuron aeneum,* Masi, *Ann. Mus. Civ. Stor. Nat.,* 53 : 229.

1956 *Atrichoptilus aeneus,* Delucchi, *Z. angew. Ent.,* 38 : 141.

1965 *Pachyneuron aeneum,* Boucek, *Sb. fauna Praci ent. Odd. nar. Mus. Praze,* 11 : 16.

1969 *Pachyneuron aeneum,* Graham, *Bull. Brit. Mus. nat. Hist.* (Ent.) Suppl., 16 : 834.

1974 *Pachyneuron deccanensis,* Mani & Saraswat, *Mem. School Ent.,* 3 : 95.

1974 *Pachyneuron kamathi,* Mani & Saraswat, *Mem. School Ent.,* 3 : 93.

1978 *Pachyneuron aeneum,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 451.

Female : Length 2.00-2.40 mm. Body dark brown to black, with metallic-blue and green reflections; head black, with blue reflections on vertex, greenish-blue and green reflections at sides and face respectively; clypeus with pale green reflections; antenna dark ferruginous-brown; scape ferruginous-brown; legs yellowish-brown, coxae concolorous with thorax, femora brownish, otherwise legs yellowish; wings hyaline, veins brown.

Head viewed in front length to width 70 : 100, finely reticulate; clypeus with longitudinal striations, median lobe notched in front; ocellocular space 3.50 times ocellar diameter, front ocellar space 1.60 times ocellar diameter; eye length to head length 55 : 100; mandibular teeth 4; antenna with 13 segments : 1.1.2.6.3; antenna to body 2 : 5; scape cylindrical and with fine reticulate microsculpture, 5.50 times longer than thick; pedicel 1.66 times as long as thick and 0.36 of scape; first annellus slightly smaller than second and 0.20 times as long thick; second 3.80 times as thick as long; funicular and club segments thicker than long; funicular segments subquadrate; club slightly more than 2 times as long as thick and equal to the preceding 3.75 funicular segments combined, slightly thicker than funicular, terminal segment with a blunt conical process at tip.

Thorax finely reticulate, propodeum without carina, scutellum with a very faint transverse line, reticulation behind which larger; fore wing without marginal fringe, except 6-7 long setae on *m* and 6 on *pm*, 11-15 setae on hind margin, discal cilia sparse, fine and dot like, almost absent in the basal 0.25; fore wing length to width 100 : 52, *m* 2.33 times as long as wide; veins *sm* : *m* : *pm* : *st* ratio 443 : 100 : 125 : 115; hind wing with marginal fringe, hind to fore wing length 80 : 100; fore coxa 1.70 times as long as wide, finely transversely reticulate; femur about 3.60 times as long as thick and 1.50 times coxa, with fine reticulate microsculpture; tibia slightly shorter than femur, about 4.20 times longer than thick; tarsus only very slightly shorter than tibia, metatarsus 0.25 of tibia, with 10-11 stout spines below, second segment about 0.75 of metatarsus, third slightly shorter than the second, fourth only very slightly shorter than the third, fifth 2 times the fourth; middle coxa 1.16 times as long as thick, finely transversely reticulate, with 5 times long setae above and 3 times long and 2 median setae in the middle; femur 4.75 times longer than wide and 2.70 times coxa, with fine reticulate microsculpture; tibia 1.15 times femur and about 7 times longer than thick, tibial spur about 0.75 of metatarsus; tarsus equal to tibia, metatarsus 0.33 of tibia and tarsus with 8 stout spines below, second segment about equal to tibial spur and slightly shorter than 0.75 of metatarsus, third about 0.75 of the second, fourth 0.75 of the third, fifth almost equal to the second; hind coxa 1.70 times as long as wide, finely transversely reticulate, with 5 long, one median and few short setae in the middle, 2 short setae above, femur 4 times longer than wide and 1.70 times coxa, with fine reticulate microsculpture;

tibia slightly longer than femur about 7 times longer than thick, spur about 0.50 of metatarsus; tarsus equal to tibia, metatarsus 0.33 of tarsus or tibia, with 11-12 stout spines below, second segment 0.62 of metatarsus, third almost 0.75 of the second and about equal to tibial spur, fourth 0.75 of the third, fifth about equal to the second.

Petiole somewhat transverse, subconical, shiny with obscure reticulate microsculpture; abdomen shiny; ovipositor slightly exserted.

Type locality : Libya (North Africa)

Distribution : N. Africa, Southern Europe, Turkey, India : Poona, Dalhousie.

Host : Syrphids attacking aphids

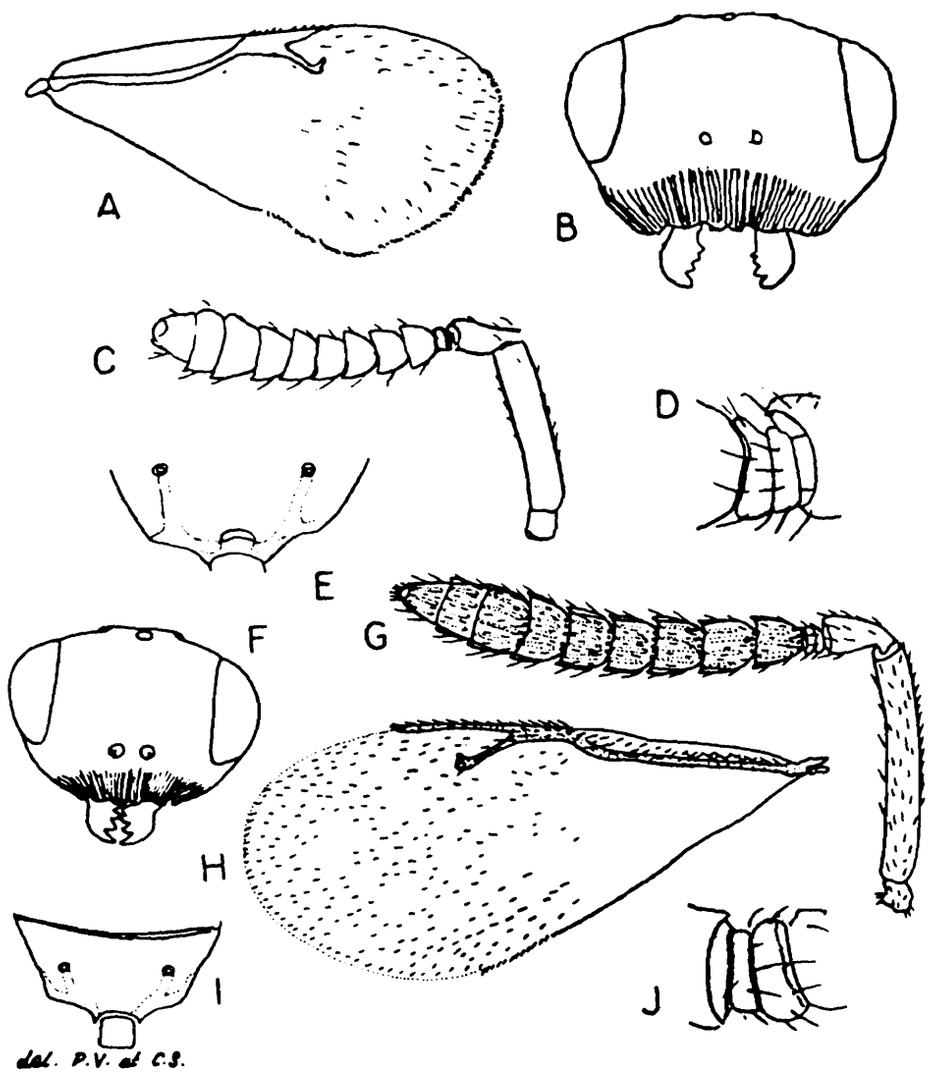

FIG. 148. A-E. *Pachyneuron aeneum* Masi, female : A. Fore wing; B. Head; C. Antenna; D. Annellus; E. Propodeum; F-J. *Pachyneuron ahlaensis* Mani & Saraswat, female : F. Head; G. Antenna; H. Fore wing; I. Propodeum; J. Annellus.

Pachyneuron ahlaensis Mani & Saraswat

(Fig. 148)

1974 *Pachyneuron ahlaensis,* Mani & Saraswat, *Mem. School Ent.,* 3 : 90.

1978 *Pachyneuron ahlaense,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 451.

Female : Length 2.80-3.30 mm. Body black, with predominently metallic-violet and bluish-green reflections, head black; antenna ferruginous-brown; scape brown; legs ferruginous-brown, coxae concolorous with thorax; fore femur, middle and hind femora, tibiae and last tarsal segments dark ferruginous-brown; wings hyaline, veins dark brown; all setae and bristles white.

Head viewed in front length to width 70 : 100, with prominent fine reticulate microsculpture on vertex and face; clypeus with fine longitudinal striations, median lobe notched in front; ocellocular space a little more than 3 times ocellar diameters; front ocellar space about 1.50 times ocellar diameter; mandibular teeth 4; antennal segments 13 : 1.1.2.6.3; scape cylindrical, 7 times longer than thick, with fine reticulate microsculpture; pedicel 2 times as long as thick and 0.28 of scape; first annellus smaller than second; first funicular segment very slightly longer than thick and 0.60 of pedicel; second segment longest, 1.20 times as long as thick and 1.20 times the first; segments 3-4 almost as long as thick and about equal to the first; segments 5-6 subequal and about 1.30 times thicker than long; club as thick as funicular segments and a little more than 2 times as long as thick, almost equal to the preceding 3 funicular segments combined, first club segment about 1.30 times as thick as long, second 1.40 times thicker than long, third segment with a conspicuous obtuse process at tip and as long as thick.

Thorax finely reticulate; fore wing without marginal fringe, 9 setae on *m* and some on *pm,* 13 setae on hind margin, discal cilia sparse and fine, almost absent in the basal 0.50, length to width 100 : 46, veins *sm : m : pm : st* ratio 400 : 100 : 190 : 108; *m* about 3.50 times as long as thick; hind wing with marginal fringe, hind to fore wing length 76 : 100; fore coxa 2 times as long as thick finely transversely reticulate; femur about 4.50 times longer than thick and 1.60 times coxa, with faint reticulate microsculpture, tibia equal to femur, almost 7 times longer than thick; tarsus to tibia 4 : 5, metatarsus slightly less than 0.25 of tibia and about 0.28 of tarsus, with 15-16 stout spines below, second segment almost 0.75 of metatarsus, third segment about 0.75 of the second, fourth segment very slightly shorter than the third, fifth segment equal to third and fourth segments combined; middle coxa about 1.70 times as long as thick, finely transversely reticulate, with 8 long and 6-7 short setae in a row above; femur 6 times longer than thick and 2.30 times coxa with faint reticulate microsculpture; tibia about 1.10 times femur and about 8 times longer than thick, tibial spur 0.66 of metatarsus;

tarsus equal to fore tibia, tarsus to tibia 3 : 4, metatarsus about 0.25 of tibia and about 0.33 of tarsus, with 12 stout spines below, second segment 0.66 of metatarsus, third almost 0.75 of the second, fourth 0.75 of the third, fifth segment equal to the second; hind coxa 1.80 times as long as wide, finely transversely reticulate with 4 long, 2 median setae in a row above and 3 short setae further above; femur 5 times longer than wide and 1.80 times coxa, with faint reticulate microsculpture; tibia a little longer than femur and 8.20 times longer than thick, spur about 0.50 of metatarsus; tarsus to tibia about 5 : 6, metatarsus very slightly more than 0.25 of tibia and almost 0.33 of tarsus with 14 stout spines below, second segment very slightly less than 0.75 of metatarsus, third a little more than 0.50 of the second, fourth slightly less than the third and 0.50 of the second, fifth subequal to the second.

Petiole broader at base than apically, as long as thick, about 0.10 of abdomen, also equal to the thickness of fore and mid coxa; abdomen including petiole slightly more than 0.50 of the body; ovipositor a little exserted.

Type locality : Northwest Himalaya : Dalhousie (Ahla Catchment area)

This species resembles *P. aeneum* Masi in the fore wing lacking marginal fringe, but differs in *pm* being 1.75 times longer than *st* *m* 3.50 times as long as thick.

Manineura Boucek

1978 *Manineura,* Boucek, *Orient. Ins.,* 12 (4) : 470.

Head with anterior part and vertex strongly convex, distinctly acutely margined behind; occiput deeply concave; head in front almost as high as wide; lower face concave and long; antennae inserted high above middle of face; lower part of face more strongly reticulate than frons, with long erect bristles; oral margin appearing truncate though really sinuate, with clypeus slightly produced in the middle, lateral angle with long gena about 120°; mandibles long, stout, with lower long tooth and 2 shorter teeth, middle tooth of right mandible double; eyes small, circular, naked; temples narrow; antennae very slender, segments 13 : 1.1.2.6.3; in both sexes; funicular segments elongate; more hairy in male than females.

Thorax short, high, convex, with pronotum hardly visible above; collar not developed; parapsidal furrows indicated only anteriorly; axillae closely advanced but the inner margins vague and almost fused with inner lobe but these parts separated by rather deep and broad and slightly arched groove from the transverse-oval scutellum; propodeum transverse, short, almost smooth, rather strongly sloping down, except for a narrow longitudinal convexity in the middle, without median keel; spiracles small, circular and close to the anterior

margin of propodeum; fore wing about 2 times as long as wide with vein *m* unusually short, hardly 2 times as long as thick basally, triangularly expanded, barely longer than bristles on its front margin and about 0.50 of vein *st;* veins *pm* and *st* subequal; marginal fringe length short.

Abdomen short, clavate, with a short, but distinct transverse petiole.

Type-species : Manineura pentatomivora (Mani)

The genus comes close to *Collessina pachyneura* Boucek from Australia. It seems that inspite of the strongly advanced axillae the 2 genera may not belong to Eutrichosomatinae in many other characters, including for example single annellus and antennae inserted in the middle of face, the excised clypeal margin and the different venation; vein *m* is enlarged and wedge-shaped. The genus also has some resemblance to *Klobonosa* Boucek from Africa, especially in the mandibles, but the lower face is much longer The principal difference is in the dorsum of thorax and venation viz. the axillae are not unusually shifted forward and vein *m* long in *Klobonosa.* All the three genera mentioned here are reported to be parasitic in eggs of Pentatomids.

Manineura pentatomivora (Mani)

1939 *Pachyneuron pentatomivora,* Mani, *Indian J. Ent.,* 1 (2-3) : 81.

1978 *Manineura pentatomivora,* Boucek, *Orient. Ins.,* 12 (4) : 471.

1978 *Manineura pentatomivora,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 445.

Female : Length 0.75 mm. Body very dark brown or brownish-black; vertex very dark brown, less conspicuously reticulate than frons; scape yellowish-brown, pedicel and annelli concolorous with scape; funicle brown; thorax very dark brown or black, opaque with shallow reticulate shagreening; veins brown; abdomen shiny black.

Head thin fronto-occipitally, especially mesad; considerably broader than long, wider than thorax; viewed in front almost oblong or subtrapezoid, longer than wide; clypeus dentate in front; both mandibles rather long, prominent, tridentate, first tooth long, acute, others broad, blunt or truncate; maxillary palpi with 4 and labial palpi with 2 segments; face convex, dark green, reticulate, with transverse rows of sparse, long, black bearded setae just below ocular line; occipital line not straight but curved, somewhat less than ocellocular; temples not very broad; occiput concave; antennae long, relatively more slender than usual, inserted well above the level of lower orbital border; segments 13 : 1.1.2.6.3; scape about 0.50 of flagellum slender; first annellus small, second large; pedicel somewhat longer than second; fourth equal to third, fifth a little shorter; sixth equal to second; club slightly thicker than and

somewhat less than preceding 3 funicular segments combined; terminal segment obscurely produced into a short, stout, spinous process.

Pronotum very much narrowed in front and hidden from dorsal view; rest of thorax very convex, opaque; scutellum same as mesonotum, without frenum; anterior margin of axillae strongly curved off from base of scutellum to tegulae; propodeum slightly necked posteriorly, non-carinate, smooth, spiracular sulci delicate but distinct; fore wing rather large, length : width ratio 100 : 53, with dense discal ciliation, marginal fringe moderately long; vein *m* slightly over 2 times as wide at apex as at base; vein *pm* shorter than *st;* vein *st* subclavate, only slightly slender just beyond base; vein *sm* more than 3.50 times *m,* relatively less distinctly broken distal than in most species, area behind vein *sm* not conspicuously devoid of discal pubescence.

Abdomen round or ovate; petiole very short, smooth; second and third tergites subequal, fourth tergite shorter, rest small.

Male : Very similar to female; scape, pedicel, annelli, legs honey-yellow; funicular segments somewhat relatively longer, 1-6 subequal; scape slightly thicker apically than basally; petiole somewhat relatively longer; abdomen spatulate, narrow cephalad, wide and subtruncate cauded, slightly over 0.75 of the rest of body.

Type locality : Kalimpong — East Himalaya

Host : Eggs of *Urostylis punctifera* Westwood on *Michelia champaca*

Euneura Walker

1844 *Eunera,* Walker, *Ann. Mag. Nat. Hist.,* (1) 14 : 331.
1846 *Eunevra,* Agassiz, *Nomencl. Zool.,* 247.
1856 *Hypsicamara,* Förster, *Hym. Stud.,* 2 : 52, 54.
1898 *Hypsicamera,* Dalla Torre, *Cat. Hym.,* 5 : 168 (Emend invalid)
1904 *Eunera,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 329.
1904 *Hypsicamera,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 329.
1909 *Euneura,* Schmiedeknecht, *Gen. Ins.,* 97 : 372, 374.
1909 *Hypsicamera,* Schmiedeknecht, *Gen. Ins.,* 97 : 372, 373.
1952 *Hypsicamera (Sic),* Nikolskaya, *Chalcid. Fauna USSR,* 247.
1952 *Eunera,* Nikolskaya, *Chalcid. Fauna USSR,* 247.
1952 *Euneura,* Muesebeck *et al., Hymen. N. America,* 2 : 541.
1955 *Eunuera,* Delucchi, *Z. angew. Ent.,* 38 : 142.
1963 *Euneura,* Peck, *Canad. Ent.,* 30 : 621.
1964 *Euneura,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 39.
1969 *Euneura,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 843.
1979 *Euneura,* Krombein *et al.,* Hymen. N. America 1 : 795.

Fore wing fringed apically; vein *pm* 1.50 times *st;* clypeus often deeply emarginate medially in front; abdomen convex above; antennae inserted a little above level of lower orbital border; segments 13 : 1.1.2.6.3; pronotal collar margined; gena acute below; pronotum narrower than mesonotum; parapsidal furrows indicated anteriorly only; scutellum without frenum; sixth tergite in female hardly 0.33 and in male hardly 0.50 of the fifth tergite, seventh very minute, eighth invisible.

Type-species : Euneura augurus Walker

Euneura lachni (Ashmead)

1877 *Pachycrepis lachni,* Ashmead, *Trans. American ent. Soc.,* 14 : 193.
1904 *Pachyneura* (!) *nawai,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 158.
1939 *Pachyneuron nazeeri,* Mani, *Indian J. Ent.,* 1 (1 & 2) : 17.
1942 *Euneura lachni,* Gahan, *Proc. US nat. Mus.,* 92 : 46.
1969 *Euneura laeviuscula,* Graham, *Bull. Brit. Mus. nat. Hist.* (Ent.) Suppl., 16 : 844.
1978 *Euneura lachni,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 443.
1979 *Eunera lachni,* Krombein *et al.,* Hymen. N. America, 1 : 795.

Female : Length 1.50 mm. Body metallic-green or very dark metallic-green; head much wider than thorax; head and thorax finely reticulately sculptured and also with a few scattered minute setigerous punctae; parapsidal furrows relatively fine.

Type locality : New Brunswick

Distribution : America, Europe, India

Host : Pausia sp., *P. californica* (Ashmead), *P. ponderosae* (Muesebeck).

This species approaches *P. hammari* Crawford very closely but is readily distinguished by the scape being metallic except for a little light brown a extreme base. From the other closely related species *P. virginicum* Girault, it is distinguished by the different proportions of antennal segments.

SUBFAMILY CRATOMINAE

1856 *Miscogastroidae* (partim), Förster, *Hym. Stud.,* 2 : 51.
1875 *Caratomidea,* Thomson, *Hym. Scand.,* 4 : 216.
1878 *Carotomides,* Thomson, Hym. Scand., 5 : 44.
1904 *Cratomini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 327.
1909 *Cratomini,* Schmiedeknecht, *Gen. Ins.,* 97 : 383.
1951 *Cratomini,* Peck in Muesebeck *et al.,* Hymen. N. America, 2 : 541.
1963 *Cratomini,* Peck, *Canad. Ent.,* 30 : 622.
1969 *Cratominae,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 848.
1979 *Cratomini,* Krombein *et al.,* Hymen. N. America, 1 : 794.

Head large; wider than thorax, face deeply excavate, radially striate with an acute process or crest by the side of orbit on face and frons; petiole short; antennal segments 13 : 1.1.8.3.

Genera included *Cratomus* Dalman; *Paracaratomus* Ashmead is excluded by Peck and by Graham from the Cratominae and placed under Sphegigasterinae in Miscogasteridae.

SUBFAMILY EUTRICHOSOMATINAE

1899 *Eutrichosoma,* Ashmead, *Proc. ent. Soc. Washington,* 2 : 204.
1904 *Tanaostigmini* (partim), Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 291.
1909 *Tanaostigmini* (partim), Schmiedeknecht, *Gen. Ins.,* 97 : 188.
1946 *Eutrichosomatinae,* Graham & Peck, *Washington Acad. Sci.,* 36 : 315.
1979 *Eutrichosomatinae,* Krombein *et al.,* Hymen. N. America, 1 : 774.

This subfamily, based on *Eutrichosoma* Ashmead, is separated from other Pteromalids by the axillae distinctly advanced in front of scutellar base; body clothed with short, scale-like hairs; scape slender; flagellum stout, with the funicular segments thicker than long; fore wing almost without discal ciliation; vein *m* subequal to *st, pm* absent; parapsidal furrows complete but short and delicate. The genus was placed by Ashmead in Tanaostigmini of the family Eupelmidae. Genus *Manineura* Boucek of Pachyneurinae comes close to this group.

SUBFAMILY MERISINAE

1904 *Merisinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 322.
1909 *Merisini,* Schmiedeknecht, *Gen. Ins.,* 97 : 359.

Propodeum without spiracular sulci; antennal segments 12-13; terminal antennal segment with a mucronate process.

KEY TO TRIBES

1. Propodeum without median longitudinal carina; parapsidal furrows complete. *Merisini*
   Propodeum with median longitudinal carina; parapsidal furrows incomplete. *Cheiropachini*

Tribe MERISINI

1904 *Merisini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 323.
1909 *Merisina,* Schmiedeknecht, *Gen. Ins.,* 97 : 362.

Callitula Spinola

1811 *Callitula,* Spinola, *Ann. Mus. Hist. nat. Paris,* 17 : 151.
1833 *Micromelus,* Walker, *Ent. Mag.,* 1 : 371, 464.
1856 *Baeotomus,* Förster, *Hym. Stud.,* 2 : 145.

1856 *Micromelus,* Förster, *Hym. Stud.,* 2 : 53, 57.
1878 *Merisus,* Subg. *Baeotomus,* Thomson, *Hym. Scand.,* 4 : 60.
1904 *Micromelus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 323.
1909 *Micromelus,* Schmiedeknecht, *Gen. Ins.,* 97 : 362.
1913 *Micromelus,* Kurdjumov, *Russk. ent. Obozr.,* 13 : 3.
1928 *Callitula,* Hill & Smith, *J. Agr. Res.,* 36 : 153.
1933 *Callitula,* Gahan, *Misc. Publs. US Dept. Agr.,* 174 : 109-114.
1952 *Callitula,* Nikolskaya, *Chalcid, Fauna USSR,* 217.
1963 *Callitula,* Peck, *Canad. Ent.,* 30 : 652.
1964 *Callitula,* Boucek, *Entomophaga,* 9 : 9-15.
1964 *Callitula,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 30, 47.
1969 *Callitula,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 459.
1979 *Callitula,* Krombein *et al.,* Hymen. N. America, 1 : 805.

Head as wide as thorax; occiput not margined; eyes usually bare; antennae inserted in the middle of face, slightly thickened apically; funicular segments 5 small; annelli 3, club asymmetrical; thorax finely punctate; collar weakly margined in the middle; parapsidal furrows incomplete; propodeum without median carina but with large convex reticulate nucha, projecting beyond hind coxae; posterolateral angles not acute; fore wing with distinct speculum; vein *m* 2 times *st,* which latter is shorter than *pm;* stigmal knob minute, with a row long hairs, pointing backward, behind vein *m.*

Type-species : Callitula bicolor Spinola

KEY TO SPECIES

1. Males.	2
Females.	3
2. Pedicel a little more than 0.33 of scape; first funicular segment longer than thick; club segments equal; vein *sm* 2.50 times as long as *m.*	*C. rugosa* (Waterston)
Pedicel equal to scape; first funicular segment quadrate; club segments gradually decreasing apically; vein *sm* 0.50 of *m.*	*C. megacephala* (Waterston)
3. Scape 4.50 times longer than thick; pedicel more than 0.33 of scape; first funicular segment longer than thick.	*C. rugosa* (Waterston)
Scape 6.00 times longer than thick; pedicel less than 0.33 of scape; first funicular segment a little thicker than long.	*C. megacephala* (Waterston)

Callitula rugosa (Waterston)

(Fig. 149)

1914 *Trigonogastra rugosa,* Waterston, *Bull. ent. Res.,* 5 : 326.
1917 *Trigonogastra agromyzae,* Dodd (?) *Trans. Proc. R. Soc. S. Austr.,* 41 : 344-368.
1938 *TRigonogastra rugosa,* Mani, *Cat. Indian Ins.,* 23 : 105.
1940 *Trigonogastra rugosa,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 20.
1978 *Callitula rugosa,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 437.

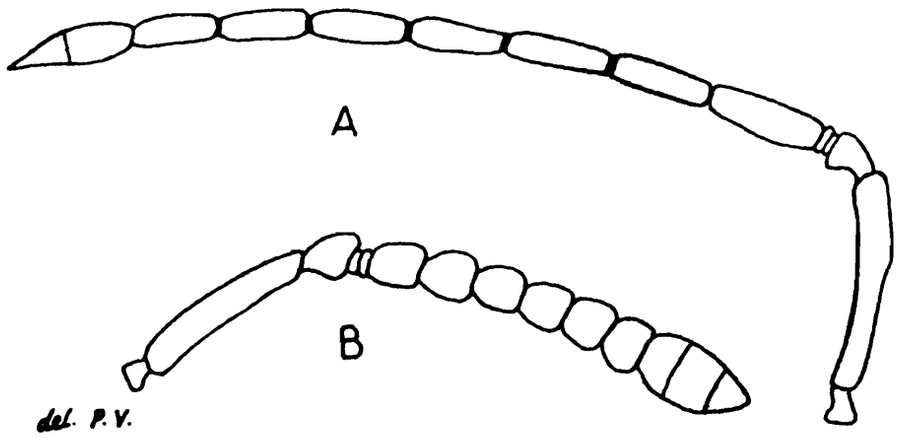

FIG.149. *Callitula rugosa* Waterston : A. Antenna, male; B. Antenna, female.

Male : Length 1.30 mm. Body generally very dark green; abdomen shiny black, with pale brown in the middle on the first and second tergites; legs brownish-yellow; tarsi dark yellow; scape light brown; rest of antenna dark brown.

Head viewed in front rounded, wider than high; ocellar triangle raised; occipital ridge absent; frons concave, more finely reticulate than vertex; antennae long filiform inserted above the lower orbital border, with 13 segments; scape equal to pedicel, annelli and 1.50 of the funicular segments combined; first funicular segment longest; other segments becoming gradually shorter apically, second and third subequal, fifth and sixth subequal; seventh shortest; club slightly expanded; segments equal; mandible with 4 teeth on the right and 3 on the left; outermost tooth longest and acute, second smaller; third and fourth teeth subequal.

Parapsidal furrows incomplete; mesonotum reticulate; propodeum with finer reticulation, produced behind into a broad neck, with an obscure median ridge; fore wing about 2.50 times as long as wide; vein *sm* with 12-14 bristles; veins *m* and *pm* together with about 12 bristles; vein *st* long; veins *sm : m : pm : st* ratio 10 : 4 : 6 : 3; hind wing about 6 times as long as wide.

Abdomen shorter than thorax, triangular; first 2 tergites occupying 0.50 of dorsum; third tergite subequal to second.

Female : Length 1.50 mm. Head viewed in front rounded oval, wider than high, smoothly reticulate; scape, pedicel and annelli yellowish; club black; scape about 4.50 times as long as thick; pedicel less than 0.33 of scape; first 4 funicular segments longer than thick; fifth as long as thick; sixth thicker than long; club expanded, with segments in ratio of 5 : 4 : 5; abdomen swollen, fusiform, second and third tergite occupying 0.75 of dorsum.

Type locality : Ceylon

Host : Agromyza phaseoli

Callitula megacephala (Waterston)

1915 *Trigonogastra megacephala,* Waterston, *Bull. ent. Res.,* 5 : 328.
1938 *Trigonogastra megacephala,* Mani, *Cat. Indian Ins.,* 23 : 105.

Male : Length 1.50 mm. Head black, large closely punctate, reticulate; antennae as in *Callitula rugosa* (Waterston), but segments longer than thick; scape 4.50 times as long as thick, pedicel a little more than 0.33 of scape, annelli 2; first funicular segment quadrate, second longer than thick; segments 3-6 quadrate; club segments ratio 10 : 9 : 8; veins *sm : m : pm* ratio 1 : 2 : 1; vein *st* a little shorter than *pm;* abdomen shiny; second tergite 0.33 of dorsum.

Female with scape 6 times longer than thick; pedicel more than 0.33 of scape; first funicular segment a little thicker than long, shorter than second segment; segments 2-5 subequal; club segments subequal.

Type locality : Ceylon

Host : Parasitic on unknown insect attacking *Artocarpus*

Tribe Cheiropachini

1904 *Roptrocerini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 322.
1909 *Roptrocerina,* Schmiedeknecht, *Gen. Ins.,* 97 : 359.

Key to Genera

1. Hind tibia with a row of stiff spines above — *Cheiropachus* Westwood
   Hind tibia without a row of stiff apines. — *Oxysychus* Delucchi

Cheiropachus Westwood

1828 *Cheiropachus,* Westwood, *Zool. J.,* 4 : 23.
1833 *Cheiropachys,* Haliday, *Ent. Mag.,* 1 : 268. Emend.
1846 *Pachychirus,* Agassiz, *Nomencl. Zool.,* 777.
1856 *Pachychirus,* Förster, *Hym. Stud.,* 2 : 66, 69.
1871 *Cheiropachys,* Van Vollenhoven, *Schetsen Hym.,* 3 : 10. Emend.
1904 *Tropidogastra,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 323.
1904 *Cheiropachys,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 283, 284.
1909 *Cheiropachys,* Schmiedeknecht, *Gen. Ins.,* 97 : 162.
1909 *Tropidogastra,* Schmiedeknecht, *Gen. Ins.,* 97 : 361.
1913 *Cheiropachys,* Kurdjumov, *Russk. ent. Obozr.,* 13 : 22.
1938 *Cheiropachus,* Gahan, *Proc. ent. Soc. Washington,* 40 : 219.
1948 *Cheiropachus,* Ferrière, *Mitt. Schweiz. ent. Ges.,* 21 : 522.
1963 *Cheiropachus,* Hedqvist, *Stud. for. Suec.,* 11 : 102-110.
1964 *Cheiropachus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 44.
1969 *Cheiropachus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 416.
1979 *Cheiropachus,* Krombein *et al.,* Hymen. N. America, 1 : 800.

Clypeus largely reticulate; emarginate in front; antennae inserted about the middle of face; scape long, reaching front ocellus; funicular segments longer than thick; club short; pronotum transverse;

mesonotum longer than wide; parapsidal furrows short; propodeum very short; fore wing with 2 transverse infumate bands, not reaching hind margin; vein *st* as long as *m;* hind coxae bare at least in apical 0.50; hind tibia with a row of short stiff spines outside; gena without a hollow; tibial spur double; abdomen oval.

Type-species : Cheiropachus guadrum (Fabricius) (= *Cheiropachus colon* (Linn.))

Cheiropachus quadrum (Fabricius)

1758 *Cynips tripunctatus,* Fourcroy, *Ent. Paris,* 2 : 389.
1758 *Sphex colon,* Linnaeus, *Syst. Nat.* (ed.), 10 : 571.
1787 *Ichneumon quadrum,* Fabricius, *Man. Ins.,* 1 : 270.
1795 *Pteromalus bimaculatus,* Swederus, *Handl. Svenska Vetensk. Akad.,* 16 : 222.
1827 *Cleonymus maculipennis,* Curtis, *Brit. Ent.,* 4 : 194.
1828 *Cheiropachus quadrum,* Westwood. *Zool. J.,* 4 : 25.
1834 *Pteromalus bimaculatus,* Nees, *Hym. Ichn. affin. Mon.,* 2 : 96.
1844 *Pteromalus bicaliginosus,* Ratzeburg, *Ichn. d. Forstins.,* 1 : 190.
1844 *Pteromalus binaevius,* Ratzeburg, *Ichn. d. Forstins.,* 1 : 190.
1844 *Pteromalus fraxini,* Ratzeburg, *Ichn. d. Forstins.,* 1 : 191.
1844 *Pteromalus binimbatus,* Ratzeburg, *Ichn. d. Forstins.,* 1 : 191.
1844 *Pteromalus binubeculatus,* Ratzeburg, *Ichn. d. Forstins.,* 1 : 191.
1856 *Pachychirus intermedius,* Förster, *Hym. Stud.,* 2 : 70.
1856 *Pachychirus quadrum,* Förster, *Hym. Stud.,* 2 : 70.
1878 *Cheiropachys colon,* Thomson, *Hym. Scand.,* 4 : 33.
1913 *Cheiropachus quadrum,* Kurdjumov, *Ent. Obozr.,* 13 : 22.
1913 *Cheiropachys colon,* Kurdjumov, *Russk. ent. Obozr.,* 13 : 22.
1938 *Cheiropachys colon,* Russo, *Boll. Lab. ent. agr. Portici,* 2 : 181.
1948 *Cheiropachus colon,* Ferrière, *Mitt. Schweiz. ent. Ges.,* 21 : 522.
1952 *Cheiropachus colon,* Sachtleben, *Arb. morph. taxon. Ent. Berlin,* 11 : 178.
1963 *Cheiropachus colon,* Hedqvist, *Stud. fors. suec.,* 11 : 103-110.
1969 *Cheiropachus quadrum,* Graham, *Bull. ent. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 416.
1978 *Cheiropachus quadrum,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 440.
1979 *Cheiropachus quadrum,* Krombein *et al.,* Hymen. N. America, 1 : 800.

Size and colour variable; length 1.50 mm.

Females mostly greenish-bronzy coloured; abdomen with metallic-green reflections; antennae black; scape reddish-orange; femora with coppery reflections; femoral tips, tibiae and tarsi yellowish; male more green or blue than females with a yellow spot basally on abdomen; legs almost entirely yellow; fore wing with an infumate band at the curvature of vein *sm,* reaching to *pm* and along *st;* in female this band more straight and shorter than in male and reaches a little before middle of wing.

Type locality : Europe

Distribution : Europe; America; India : Himachal Pradesh; Pakistan

Host : Curclionid *Magdalis aenescens* Lec., *Phloeosinus canadensis* Swaine, *P. punctatus* Lec., *Scolytus multistriatus* (Marsh.), *S. rugulosus* (Ratzeburg); (Cerambycidae), *Tetrops* sp.

A widespread Holarctic (Mainly European) parasite of xylophagous beetles.

In twigs of *(Malus ?) pumila;* on cherry bark.

Oxysychus Delucchi

1956 *Oxysychus,* Delucchi, *Z. angew. Ent.,* 39 : 240, 246.
1964 *Oxysychus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 46.
1969 *Oxysychus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 432.
1979 *Oxysychus,* Krombein *et al.,* Hymen. N. America, 1 : 801.

Body blue-black; dark green or bronze tinted; pronotal collar finely margined the whole width of pronotum; club triarticulate, with sutures oblique; gena with acute edge near mandibular base; vein *m* not thickened basally; third annellus narrow, transverse; antennae inserted midway between front ocellus and clypeal lower margin, which is slightly emarginate; propodeal carina not present; fore wing immaculate; with speculum; hind tibial spurs usually double, one of which may be rudimentary; abdomen ovate; vein *pm* distinctly longer than *st;* ovipositor only slightly exserted; posterolateral angles of propodeum not acuate; antennae with 13 segments : 1.1.3.5.3; first tergite incised behind.

Type-species : Oxysychus silvestrii (Masi)

Oxysychus coimbatorensis (Ferrière)

1939 *Dinarmus coimbatorensis,* Ferrière, *Bull. ent. Res.,* 39 : 160.
1978 *Oxysychus coimbatorensis,* Boucek, Subba Rao & Farroqi, *Orient. Ins.,* 12 (4) : 449.

This species is unknown to me and its orginal description is not also available.

Type locality : Coimbatore

Distribution : India : Coimbatore (Tamil Nadu), Pusa (Bihar), Dhone (Andhra Pradesh), Delhi; Pakistan : Sialkot

Host : Parasitic on an unknown insect in the stem of *Amaranthus viridis*

Oxysychus nupserhae (Dutt & Ferrière)

1961 *Neocatolaccus nupserhae,* Dutt & Ferrière, *Indian J. agric. Sci.,* 31 : 139.
1978 *Oxysychus nupserhae,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 450.

This species is unknown to me and its orginal description is not also available.

Type locality : West Bengal, India

Distribution : India : West Bengal, Delhi

Host : Nupserha bicolor Thomson, girdling jute stems

Oxysychus sphenopterae (Ferrière)

1931 *Neocatolaccus sphenopterae,* Ferrière, *Bull. ent. Res.*, 22 : 130.

1937 *Neocatolaccus indicus,* Ramakrishna Ayyar & Mani, *Rec. Indian Mus.*, 39 (2) : 126.

1938 *Neocatolaccus sphenopterae,* Mani, *Cat. Indian Ins.*, 23 : 151.

1940 *Neocatolaccus indicus,* Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 9.

1978 *Oxysychus sphenopterae,* Boucek, Subba Rao & Farooqi, *Orient. Ins.*, 12 (4) : 450.

Female : Length 2.70-3.30 mm. Body generally greenish-black; abdomen aeneous; propodeum and first tergite shiny green; antennae and legs brown; scape, pedicel, tibiae and tarsi (except middle tarsi and base of hind tibiae) yellow.

Head in front rounded, punctate, finely striate near mouth; mandibles with 4 teeth; viewed above transverse,. occiput not margined; front ocellar space less than ocellocular space; antennae inserted above the level of lower orbital border; scape slender, slightly curved; pedicel 2 times as long as thick; annelli 3, third largest; first funicular segment longer and thicker than pedicel; the following 4 segments subequal, shorter than first, 1.50 times as long as thick; club ovate, shorter than the preceding 2 segments combined.

Thorax rugosopunctate; parapsidal furrows indicated only anteriorly; scutellum flat, as long as wide behind; propodeum without nucha, with median carina and lateral furrows; fore wing without cilia basally; vein *m* about 0.50 of *sm; pm* shorter than *m; st* not much shorter than *pm* hind tibiae longer than femora, spur single.

Abdomen ovate, acute, longer than thorax; tergites 2-4 short, transverse, 5 as long as wide in front, ovipositor slightly exserted.

Male : Length 2.60 mm. Like female, but tibiae and tarsi white; annelli 2; sixth funicular segment longer than thick; abdomen shorter than thorax.

Type locality : Sudan Africa

Distribution : Africa, Sudan; India : Punjab, Coimbatore

Host : Sphenoptera gossypii Cotes

SUBFAMILY NEODIPARINAE

1955 *Panstenoninae* (partim), Erdös, *Ann. Hist. Nat. Mus. Nat. Hung.*, 6 : 296.

1961 *Neodiparini,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 34 : 66.

1969 *Neodeiparinae,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 66.

Body generally black, sometimes with metallic sheen; mandibles bidentate; antenna inserted wide apart from each other, close to the mouth, funicular segments 5, with one annellus or without annellus; propodeum with spiracles close to the front margin.

Single genus *Neodipara* Erdös, known at present from only Europe.

SUBFAMILY DIPARINAE

1875 *Diparides,* Thomson, *Hym. Skand.,* 4 : 217.
1876 *Dipardes,* Thomson, *Hym. Skand.,* 5 : 175.
1886 *Dipardes,* Howard, *Ent. America,* 2 : 33, 35.
1897 *Diparinae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 236.
1904 *Diparinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 334.
1909 *Diparini,* Schmiedeknecht, *Gen. Ins.,* 97 : 366.
1946 *Lelapinae,* Gahan, *Proc. US nat. Mus.,* 96 : 375.
1954 *Diparinae,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 29 : 54.
1964 *Diparinae,* Boucek in Peck *et al., Mem. ent. Soc. Canada,* 34 : 28.
1969 *Diparinae,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 63.
1969 *Diparini,* Hedqvist, *Ent. Tidskr.,* 90 (3-4) : 174.
1979 *Diparinae,* Krombein *et al.,* Hymen. N. America, 1 : 782.

In this subfamily the females usually wingless, or with rudimentary wings, the males fully winged; sexes also have quite different antennae. Consequently males and females of the same species have often been placed in different subfamilies, or even superfamilies; head large, much wider than thorax, with 6 strong setae; antennae inserted on level of lower orbital border, segments 1.1.2.5.3 or 1.1.1.7.3; mandibles 2-4 teeth; parapsidal furrows present or absent; propodeal nucha short; petiole thicker than long; hind tibial spurs one or 2; male petiole long.

Included genus *Dipara* Walker

SUBFAMILY NETOMOCERINAE

1955 *Netomocerinae,* Boucek, *Acta Ent. Nat. Prazae,* 29 : 49.
1969 *Diparinae* (partim), Graham, *Bull. Brit. Mus.* (Ent.) Suppl., 16 : 63.
1971 *Netomocerinae,* Hedqvist, *Ent. Tidskr.,* 92 (3-4) : 237.

Mandible with 3 teeth, antennae inserted on level of lower orbital border; clavate in female with 13 segments : 1.1.1.7.3; in male elongate with 11 segments : 1.1.1 7.1; parapsidal furrows complete; scutellum with frenum; propodeum without nucha, rugose; first tergite longest; hind tibial spur double; vein *m* longer than *pm, st* subequal to or little shorter than *pm*, wings in female normally developed; fore wings with 2 fuscous spots, one behind vein *m* and second near tip; petiole thicker than long.

Single genus *Netomocera* Boucek.

Netomocera Boucek

1955 *Netomocera, Boucek, Acta Ent. nat. Pragae,* 29 : (426 : 49-51.
1969 *Netomocera,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 64, 66.
1971 *Netomocera,* Headqvist, *Ent. Tidsk.,* 92 (3-4) : 37.
1978 *Netomocera,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 440.

Head finely reticulate; pronotum in male reticulate like head, in female more weakly sculptured to appear shagreened; abdomen smooth; frontovertex flat; scrobe deep; antennae inserted distinctly below level of lower orbital borders; clypeus bulged out, with an obtuse-angled tooth in front; mandibles stout, sickled shaped, with 3 large and acute teeth as in *Eucharis* Latr., gena strongly coverging, so that head appears in front view shortly triangular; eyes prominent, oval, naked; vertex very narrow; occiput not limited; head distinctly wider than thorax; antennae with 13 segments : 1.1.1.7.3; clavate in female and filiform in male; all segments subequal; club not clearly differentiated in male; pronotum large, collar not separated; parapsidal furrows complete, connecting with axillary furrows; scutellum pentagonal, frenum indicated by an obscure sculptured line; propodeum flat, slightly sloping, with many small areas marked by fine carinae and arranged somewhat in arches; spiracle rounded; legs strong; tarsi short; hind tibial spurs 2; wings pubescent except for a narrow speculum; marginal cilia short; vein *m* long, with a row of strong bristles, more than on vein *pm;* abdomen with a short, rugose petiole; moderately vaulted dorsally; first tergite large, bell-shaped, covering greater part of dorsum; in male all remaining tergites retracted; in female abdomen pointed apically; body with very indistinct short, adpressed pubescence, but also with numerous long stout bristles, arranged characteristically; head with 8 bristles; 2 on each side of the upper margin of eyes and 6 in a transverse row behind ocelli; on pronotum 6 bristles in a row in front of the posterior margin; scutum bears 2 bristles in the middle and another before tegula; scutellum with 4 bristles in a row.

Type-species : Netomocera setifera Boucek

Hedqvist (*loc. cit.*) places this genus in a separate tribe Netomocerini, characterized by head large, eyes large, mandibles tridentate, antenna in female clavate and with segments 1.1.1.7.3 and in male with segments 1.1.1.9.1, elongate; inserted above or on lower orbital border; scutellum with frenum; propodeum rugose to areolate, without nucha; petiole as long as thick; first tergite longest; hind tibial spurs 2; fore wing with narrow speculum; vein *m* longer than *pm* (3 : 1); vein *st* equal or subequal or slightly shorter than *pm*.

Netomocera setifera Boucek

(Fig. 150)

1955 *Netomocera setifera,* Boucek, *Acta Ent. nat. Pragae,* 29 : 50-53.
1969 *Netomocera setifera,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 66.
1975 *Netomocera setifera,* Saraswat & Mukerjee, *Mem. School Ent.,* 4 : 37.

Female Length 2.10 mm. Body testaceous-brown to black; head, flagellum, propodeum, first tergite in the apical 0.50 fuscous; head otherwise faintly metallic-green; fore wing with a pair of large fuscous spots, smaller one behind vein *m* and the larger distally near tip; scape and legs testaceous, in some specimens legs yellowish; abdomen brown, with the late tergite yellowish-brown with a subterminal dark brown band; ovipositor darker brown at tip.

Head, pronotum, scutellum widths 33 : 24 : 27; head smooth; viewed in front length to width 78 : 100; ocellocular space 5.50 times

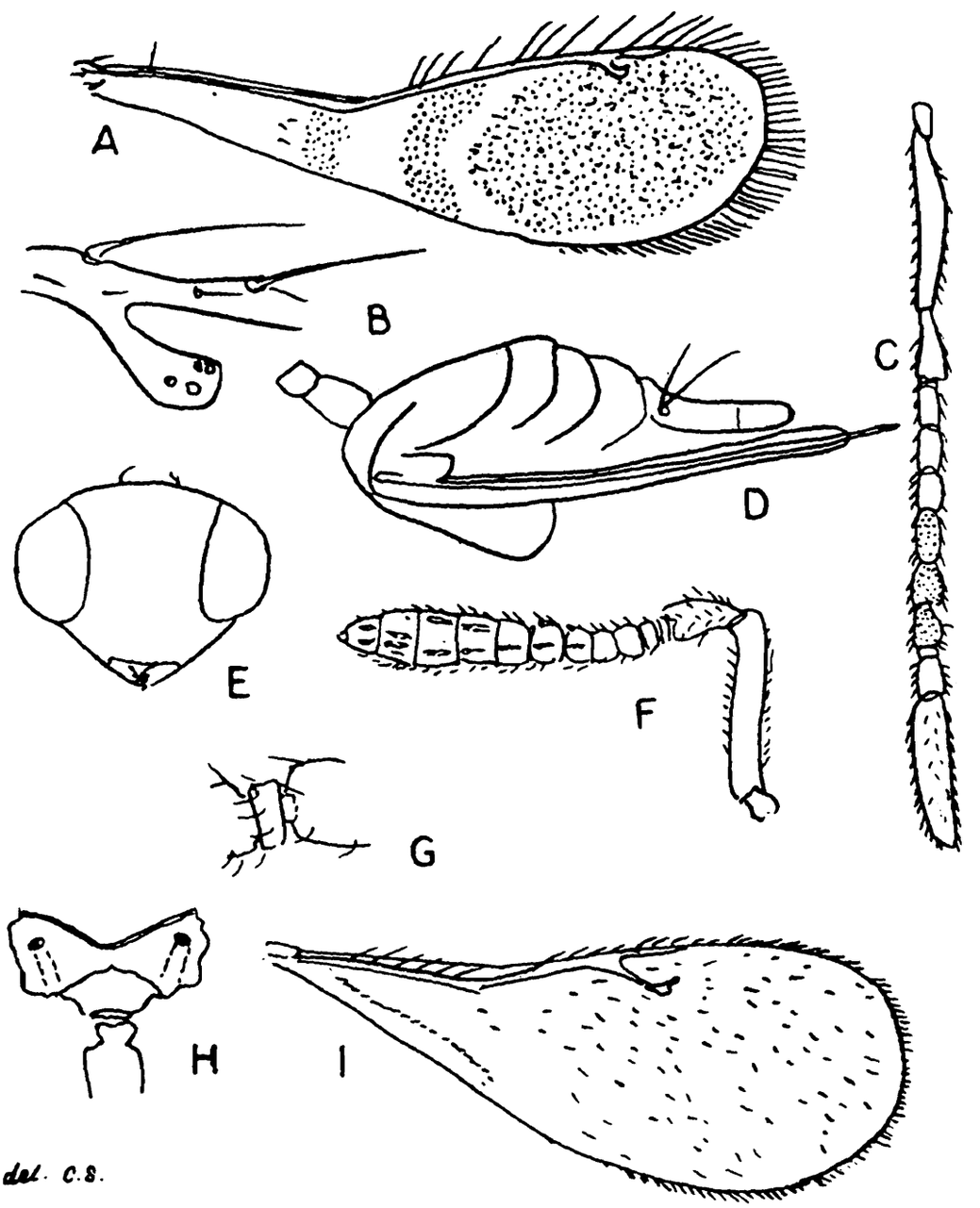

FIG. 150. A-D. *Netomocera setifera* Boucek, female : A. Fore wing; B. Vein *st;* C. Antenna; D. Abdomen; E-I. *Asaphes suspensus* (Nees), female : E. Head in front; F. Antenna; G. Annellus; H. Propodeum; I. Fore wing.

ocellar diameter; front ocellar space 0.75 of ocellar diameter; interocellar space about 2.50 times ocellar diameter; scape slender, almost reaching front ocellus, 6.66 times as long as thick; pedicel about 2.57 times longer than thick, about 0.45 of scape and subequal to the first funicular segment; funicular segments subequal, each about 1.50 times as long as thick; segment 7 about 0.50 times as long as thick; club equal to the preceding 3.50 segments combined; 3.16 times as long as thick and solid.

Thorax smooth; scutum finely reticulate; scutellum with 3 pairs of bristles; mesonotum with one pair of bristles; propodeum very smooth; fore wing length to width 100 : 32; veins *sm* : *m* : *pm* : *st* ratio 72 : 100 : 18 : 9; vein *sm* with 3 bristles directed forward; vein *m* with 14 bristles directed forward; *pm* with 2 setae; middle coxa about 2.33 times longer than thick; femur 6.80 times longer than thick, 2.42 times coxa; tibia 11 times longer than thick; tibial spur about 0.13 of tibia and 0.60 of metatarsus; tarsus 0.68 of tibia; metatarsus about 0.22 of tibia and 0.20 of tarsus; second segment about 0.66 of metatarsus; third segment about 0.66 of the second; fourth segment equal to the third; fifth segment equal to second; hind coxa about 2.40 times longer than thick; femur about 3.60 times longer than thick and 1.41 times coxa; tibia about 11 times longer than thick; tarsus about 0.73 of tibia.

Abdomen a little shorter than thorax, length to thickness 100 : 45; smooth; petiole to abdomen 13 : 100; first tergite occupying 0.66 of dorsum of abdomen.

Male : Length 1.00-1.80 mm. Body black; head and thorax faintly metallic; antennae long, slender, filiform and subequal to body; pedicel about 0.50 of the first funicular segment.

Type locality : Moravia (Europe)

Distribution : India : Yercaud (Eastern Ghats), Central and Sourthern Europe.

SUBFAMILY PANSTENONINAE

1897 *Diparinae* (partim), Ashmead, *Proc. ent. Soc. Washington.*, 4 : 236
1904 *Diparinae* (partim), Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 334.
1909 *Diparini* (partim), Schmiedeknecht, *Gen. Ins.*, 97 : 366.
1955 *Panstenoninae,* Erdös, *Ann. Hist. Nat. Mus. Natl. Hung.*, 6 : 296
1969 *Panstenoninae,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 92.
1979 *Panstenoninae,* Krombein *et al.*, Hymen. N. America, 1 : 786.

Antennae inserted high on face, close to front ocellus, with 13 segments : 1.1.2.6.3; fore wing with *m* at least 4 times *st*; costal cell narrow; propodeum in the middle with nucha produced behind between hind coxae; vein *pm* often longer than *m*; petiole sculptured, longer than thick; orbits parallel; head and thorax with sparse setigerous punctae; parapsidal furrows complete. Included genus *Panstenon* Walker.

SUBFAMILY ASAPHINAE

1856 *Miscogasteoidae* (partim), Förster, *Hymen. Stud.*, 2 : 53.
1876 *Spalangiina* (partim), Thomson, *Hym. Scand.*, 4 : 207.
1904 *Asaphini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 327.
1909 *Asaphina*, Schmiedecknecht, *Gen. Ins.*, 97 : 368.
1951 *Asaphini*, Peck in Muesebeck *et al.*, Hymen. N. America, 2 : 536.
1955 *Asaphini*, Boucek, *Sb. ent. Odd. nrd. Mus. Praze*, 30 : 313.
1964 *Asaphini*, Boucek in Peck *et al.*, *Mem. ent. Soc., Canada*, 34 : 36.
1969 *Asaphinae*, Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 77.
1979 *Asaphine*, Krombein *et al.*, Hymen. N. America, 1 : 785.

Antenna inserted close to the mouthparts; head lenticular, deeply excavate behind; parapsidal furrows complete.

Most species parasitize Coccids.

KEY TO GENERA

1. Vein *m* at the most only 1.30 times *st; pm* long; antennae with 13 segments — *Asaphes* Walker

   Vein m at least 2 times *st; pm* distinct; abdomen with tuft of hairs at the sides basally; antennae with 10 segments in female and 9 segments in male .. — *Ophelosia* Riley

Asaphes Walker

1834 *Asaphes*, Walker, *Ent. Mag.*, 2 : 151.
1856 *Isocratus*, Förster, *Hym. Stud.*, 2 : 53, 58.
1876 *Isocratus*, Thomson, *Hymen. Scand.*, 4 : 207.
1904 *Asaphes*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 328.
1909 *Asaphes*, Schmiedeknecht, *Gen. Ins.*, 97 : 368, 369, 370.
1913 *Parectroma*, Brethès, *An. Buenos Aires Mus. Nac. de Hist.*, 24 : 91.
1952 *Asaphes*, Nikolskaya, *Chalcid. Fauna USSR*, 245.
1960 *Asaphes*, de Santis, *Rev. Fac. Agr. La Plata*, (3) 36 : 113.
1963 *Asaphes*, Peck, *Canad. Ent.*, 30 : 601.
1964 *Asaphes*, Peck *et al.*, *Mem. ent. Soc. Canada*, 34 : 36.
1969 *Asaphes*, Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 78.
1979 *Asaphes*, Krombein *et al.*, Hymen. N. America, 1 : 785.

Head as wide as thorax, almost smooth; clypeus truncate in front; occiput margined; mandible with 2 on left and 3 teeth on right; antennae short with 13 segments including 2 annelli; scape mostly concealed in scrobe; funicle swollen apically, club rounded; eye bulging; gena long, convex, acutely margined, strongly carinate; pronotum narrowed in front, collar large; mesonotum smooth, parapsidal furrows deep; scutellum with strong frenum; propodeal carina short; vein *m* thin, hardly equal to or 1.30 times *st; pm* longer than *m;* legs slender; petiole 2 times as long as thick, furrowed above; tergites 2-3 large, with some hairs on either side of petiole; ovipositor shortly exserted.

Type-species : Asaphes vulgaris Walker

KEY TO SPECIES

1. Females	2
Males	3
2. Head viewed above with temples rather straight, only moderately convergent, forming an angle with occipital edge of head; speculum of fore wing well defined; femora fuscous to black, tibiae at least slightly brownish, usually fuscous to almost wholly black	*A. vulgaris* Walker
Head viewed above with temples curved and rather strongly convergent, not angulate posteriorly; speculum of fore wing indistinct or absent; legs, except coxae, testaceous, femora sometimes more or less infuscate proximally, rarely tibiae with a dark ring	*A. suspensus* (Nees)
3. Scape slender, 5.50-6.00 times as long as thick; second annellus, at most 1.50 times as thick as long; funicular segments 1-2 (sometimes also 3) only slightly transverse; pedicel and flagellum brown to fuscous, or at most testaceous beneath	*A. vulgaris* Walker
Scape stout, only about 4.50 times as long as thick; second annellus nearly 2 times as thick as long, all funicular segments distinctly transverse; at least club testaceous, often whole flagellum more or less so, sometimes also pedicel	*A. suspensus* (Nees)

Asaphes vulgaris Walker

1834 *Asaphes vulgaris,* Walker, *Ent. Mag.,* 2 : 152.
1834 *Eurytoma aenea,* Nees, *Hym. Ichn. Affin. Mon.,* 2 : 42.
1838 *Pteromalus petiolatus,* Zetterstedt, *Ins. lapponica descripta,* 432.
1848 *Chrysolampus aeneus,* Ratzeburg, *Ichn. Forstin. ent. Berlin,* 2 : 185.
1876 *Isocratus vulgaris,* Thomson, *Hym. Scand.,* 4 : 208.
1913 *Asaphes vulgaris,* Kurdjumov, *Russk. ent. Obozr.,* 13 : 24.
1949 *Asaphes vulgaris,* Dunn, *Bull ent. Res.,* 40 : 104.
1951 *Pachycrepoides indicus,* Bhatnagar, *Indian J. agric. Sci.,* 21 : 160-163.
1955 *Asaphes vulgaris,* Bakkendorf, *Ent. Meddr.,* 27 : 138, 144.
1955 *Asaphes vulgaris,* Delucchi, *Mem. Soc. Roy. Ent. Belg.,* 27 : 174.
1963 *Asaphes vulgaris,* Peck, *Canad. Ent.,* 30 : 603.
1969 *Asaphes vulgaris,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 80.
1978 *Asaphes vulgaris,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 437.
1979 *Asaphes vulgaris,* Krombein *et al.,* Hymen. N. America, 1 : 785.

Female : Length 1.20-2.30 mm. Head, thorax and petiole bronze with a greenish or bluish tinge, nearly black; scutellum often more conspicuously tinged with bronze than the rest of thorax; abdomen black or virtually so.

Head and thorax with more numerous bristles than in *A. suspensus*; ocelli disposed in a triangle of about 110°; scrobes deep; pronotal collar with shoulders rather prominent; pedicel nearly 2 times as long as thick.

Male Length 1.10-1.50 mm. Head, thorax, petiole and coxae dark to bright green, blue-green or blue; rest of legs testaceous with hind femora infuscate at least proximally; sometimes fore and middle slightly infuscate, occasionally hind tibiae slightly darkened; bristles of head and thorax, antennal scrobes and pronotal collar, much as in female; ocelli disposed in a triangle of 110°-115°

Type locality : Europe.

Distribution : India : Meghalaya Shillong (Assam); Nepal : Kathmandu; Europe, Iceland, Greenland, America, Argentina.

Host Aphids on *Datura* sp.

Asaphes suspensus (Nees)

(Fig. 150)

1834 *Chrysolampus suspensus,* Nees, *Hym. Ichn. Affin. Mon.,* 2 : 127.
1834 *Chrysolampus altiventris,* Nees, *Hym. Ichn. Affin. Mon.,* 2 : 127.
1838 *Pteromalus petioliventris,* Zetterstedt, *Ins. lapponica descripta,* 429.
1842 *Colax aphidii,* Curtis, *J. Roy. Agr. Soc.,* 3 : 60.
1844 *Chrysolampus aphidiphagus,* Raszeburg, *Ichn. Forstin. ent. Berlin,* 1 : 181.
1848 *Chrysolampus aphidiphagus,* Ratzeburg, *Ichn. Forstin. ent. Berlin,* 2 : 184.
1913 *Asaphes aphidiphagus,* Kurdjumov, *Russk. ent. Obozr.,* 13 : 24.
1958 *Asaphes swaraji,* Sharma & Subba Rao, *Indian J. Ent.,* 20 : 160-163.
1969 *Asaphes suspensus,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 82.
1974 *Pachyneuron uniarticulata,* Mani & Saraswat, *Mem. School Ent.,* 3 : 96.
1978 *Asaphes suspensus,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 436.

Female Length 1.80 mm, fore wing 1.50 mm, abdomen excluding petiole 0.80 mm. General colour of body dark metallic-green, with blue reflections; head black, with blue reflections on vertex and sides, bluish-green reflections on face; antenna black, with faint greenish reflections on scape and pedicel; legs brown, all coxae concolorous with thorax, distal 0.75 of all femora and last tarsal segments dark brown; wings hyaline, veins brownish.

Head viewed in front length to width 72 : 100, finely reticulate on clypeus, genae, in between and around antennal sockets only, otherwise smooth; vertex and frons with shallow and sparsely scattered punctae; clypeus truncate in front; ocellocular space about 2 times ocellar diameter, front ocellar space about 1.50 times ocellar diameter; mandibles tridentate; antenna with 13 segments : 1.1.1.7.3; scape long, cylindrical, almost 6 times longer than thick; pedicel almost 2 times as long as thick and about 0.40 of scape; annellus slightly more than 2 times as thick as long; funicular segments subquadrate, club very slightly more than 2 times as long as thick and almost equal to preceding 3.50 funicular segments combined; terminal segment with a blunt, conical process at tip.

Thorax finely reticulate; fore wing length to width 100 : 42, veins *sm* : *m* : *pm* : *st* ratio 443 : 100 : 142 : 100; *m* with 13 long setae; hind to fore wing 81 : 100; fore coxa about 2.60 times as long as thick, finely, transversely, reticulate; femur 4.80 times longer than thick and 1.50 times coxa, distinctly attenuated apically, finely reticulate; tibia almost equal to femur, about 8 times longer than thick; tarsus to tibia 5 : 6; metatarsus about 0.20 of tibia and about 0.25 of tarsus with 11-12 stout spines below, second segment very slightly shorter than metatarsus, ratio of segments 3-5. 5 : 4 : 7; middle coxa almost 2 times as long as thick, finely transversely reticulate; femur 6 times longer than thick and 2.30 times coxa, slightly attenuated apically; tibia about 1.20 times femur and 10 times longer than thick, spur slightly more than 0.50 of metatarsus; tarsus to tibia 7 : 10, metatarsus about 0.20 of tibia and slightly less than 0.33 of tarsus, with 8 stout spines below, segments 2-5 in the ratio of 3 : 6 : 5 : 7

Petiole broader at tip than basally, as long as thick and about 0.11 of abdomen; abdomen including petiole 1.00 mm, very slightly more than 0.50 of body; ovipositor well exserted.

Type locality Europe

Distribution : Cosmopolitan

Hosts : Hyperparasite of aphids on *Prunus persica; Macrosiphum* sp. on *Rosa; Macrosiphonella artemisiella* on *Artemisia; Brevicoryne brassicae* on *Brassica compestris; Aphidius, Ephedrus, Toxares, Trioxys* spp.; *Diaretiella rapae* in *Lipaphis erysimi.*

Ophelosia Riley

1890 *Ophelosia,* Riley, *Insect Life,* 11 : 249.
1904 *Ophelosia,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 328.
1909 *Ophelosia,* Schmiedeknecht, *Gen. Ins.,* 97 : 369.

This genus agrees with *Moraniella* Cameron, but *m* 2 times *st, pm* distinctly equal tp *st;* tuft of hair on base of abdomen absent. The following is reproduced from Riley :

"Closely resembles in habitus *Dilophogaster* Howard (See *Ann. Rept. Dept. Agr.,* 1880, 368, where it is described as *Tomocera,* subsequently changed to *Dilophogaster* on account of the preoccupation of *Tomocera* in *Thysanura),* with which it agrees in many characters, but from which it is sharply defined. The antennal peculiarities are identical in the two forms, viz : The simple, clavate, 10-jointed female antennae, and the compressed, serrate, hairy, 9 jointed male form. The wings in *Ophelosia* differ markedly, as follows : The sub-marginal vein is not curved downward; the marginal is more than twice as long as stigmal; just below the bend of the sub-marginal in the female is a broad patch of very stout

bristles arising from the wing surface. The petiole of the abdomen is nearly as long as the width of the metascutum; the fimbriae of the callus are very dense, but short. The tufts of hairs at base of abdomen are sparse. The hind tibiae are furnished at tip with a long, slender, slightly curved spine, nearly as long as first tarsal joint, while in *Dilophogaster* it is entirely unarmed."

Type-species : Ophelosia crawfordi Riley

Ophelosia crawfordi Riley

1890 *Ophelosia crawfordi,* Riley, *Ins. Life,* 11 : 248, 249.

1978 *Ophelosia crawfordi,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 449.

Riley describes the species as follows :

"Female : Length 2.00 mm., expanse 4.00 mm. General color honey-yellow, somewhat darker dorsally than ventrally. Head : face and vertex strongly transverse-rugose; ocelli concolorous; eyes darker; antennae with club more dusky and with joints 2-6 of flagellum paler than the rest. Thorax : pronotum and mesonotum plainly shagreened, with sparse, appressed concolorous pile; mesoscutellum faintly striate; lateral parts of mesoscutum strongly rugose, the centre faintly so; the four mesoscutellar pileferous tubercles as also the hairs, black, a small spot behind each tegula and the lateral parts of the mesoscutum black or blackish; fimbria of metascutum white; wings with a narrow curved transverse dusky band reaching from the bend of the submarginal vein to hind border of wing including the patch of wing bristles; also with a large nearly circular dusky shade below stigmal and reaching nearly across wing; legs uniformly honey-yellow with the coxae sometimes brownish above. Abdomen with basal joint dark brown, and more or less brown at sides and near tip.

Male : Slightly smaller; sculpture identical throughout. Pile very inconspicuous, dark. General color black, shining; all legs honey-yellow; the upper sides of the hind femora and tibiae somewhat darkened; hind coxae black; front and middle coxae honey-yellow at tip; antennae with the scape honey-yellow, and the funicle brownish; wings perfectly hyaline."

Type locality : Adelaide (Australia)

Distribution : South-Eastern Asia, Australia and some Pacific Islands; India : Nasik, Maharashtra

Host : Nipaecoccus sp., *Icerya puchasi*

SUBFAMILY SPALANGIINAE

1840 *Spalangiini* (partim), Westwood, *Introd. Mod. Class,* 2 : 66.

1856 *Spalangoidae* (partim), Förster, *Hym. Stud.,* 2 : 18, 22, 40.

1875 *Spalangiina* (partim), Thomson, *Hym. Scand.,* 4 : 12, 206.

1886 *Spalangiinae,* Howard, *Ent. America,* 1 : 198.
1897 *Spalangiinae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 248.
1904 *Spalangiinae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 332.
1909 *Spalangiini,* Schmiedeknecht, *Gen. Ins.,* 97 : 384.
1963 *Spalangiidae,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 35 : 431.
1965 *Spalangiidae,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 36 : 593.
1969 *Spalangiinae,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 48.
1979 *Spalangiinae,* Krombein *et al.,* Hymen. N. America, 1 : 778.

Head elongate; antennae inserted near mouth; thorax elongate, flat, pronotum narrower than mesonotum; conical, parapsidal furrows deep; costal narrow; abdomen petiolate.

Genera included *Spalangia* Latreille

Spalangia Latreille

1805 *Spalangia,* Latreille, *Mist. nat. gen. particuliere Crust. Ins.,* 13 : 227-228.
1833 *Spalangia,* Haliday, *Ent. Mag.,* 1 : 268, 333-335.
1839 *Spalangia,* Curtis, *Brit. Ent.,* 16 : 740.
1850 *Spalangia,* Förster, *Verh. nat. Ver. preuss. Rheinl.,* 7 : 505-518.
1851 *Spalangia,* Förster, *Verh. nat. Ver. Preuss. Rheinl.,* 8 : 1-5.
1878 *Spalangia,* Thomson, *Hymen. Scand.,* 4 : 207, 214-215.
1894 *Spalangia,* Ashmead, *Proc. ent. Soc. Washington,* 3 : 27-37.
1904 *Spalangia,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 334.
1909 *Spalangia,* Schmiedeknecht, *Gen. Ins.,* 97 : 386-387.
1913 *Spalangia,* Richardson, *Jour. Morph.,* 24 : 515.
1915 *Prospalangia,* Brethès, *An. Mus. nac. Hist. nat. B. Aires,* 24 : 314.
1917 *Spalangia,* Masi, *Novitates Zool.,* 24 : 188-189.
1952 *Spalangia,* Nikolskaya, *Trud. Zool. Inst. Leningrad,* 250-253.
1963 *Spalangia,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 35 : 433.
1969 *Spalangia,* Burks, *Smithsn. Contrib. Zool.,* 2 : 1-7.
1969 *Spalangia,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 48.
1979 *Spalangia,* Krombein *et al.,* Hymen. N. America, 1 : 778.

Body black, with slight metallic reflection, with setigerous punctae; posterolateral corners of propodeum acute, tooth-like; mandible bidentate in female, in male tridentate; scrobes deep and a long spine or sharp carina between, facial impression absent; antennae in male with 12 segments, in female 10 segments inserted close to the mouth border; without annelli, funicle 7, club solid or triarticulate.

Type-species : Spalangia nigra Latreille

Key to Species

1. Pronotum with distinct posterior crenulate cross-line; petiole less than 2 times thick 2
   Pronotum without distinct posterior crenulate cross-line; petiole 2 times as long as thick *S. obscura* Boucek

2. Pronotal collar anteriorly rounded, not margined — 3

   Pronotal collar anteriorly subpentagonal, distinctly ridged, except a narrow interruption at meson, the ridge bordered by a row of punctae — *S. nigroaenea* Curtis

3. Head in front view distinctly longer than wide; eyes small, not prominent; vein *st* as long as or shorter than *pm* — 4

   Head in front view subtriangular, hardly longer than wide; eyes large, moderately prominent; vein *st* longer than *pm* — *S. gemina* Boucek

4. Genae slightly longer than longer diameter of eyes; scutellum with several punctae laterally; vein *st* shorter than *pm* — *S. cameroni* Perkins

   Genae shorter than longer diameter of eyes; scutellum with only a few punctae sublaterally; vein *st* as long as *pm* — *S. endius* Walker

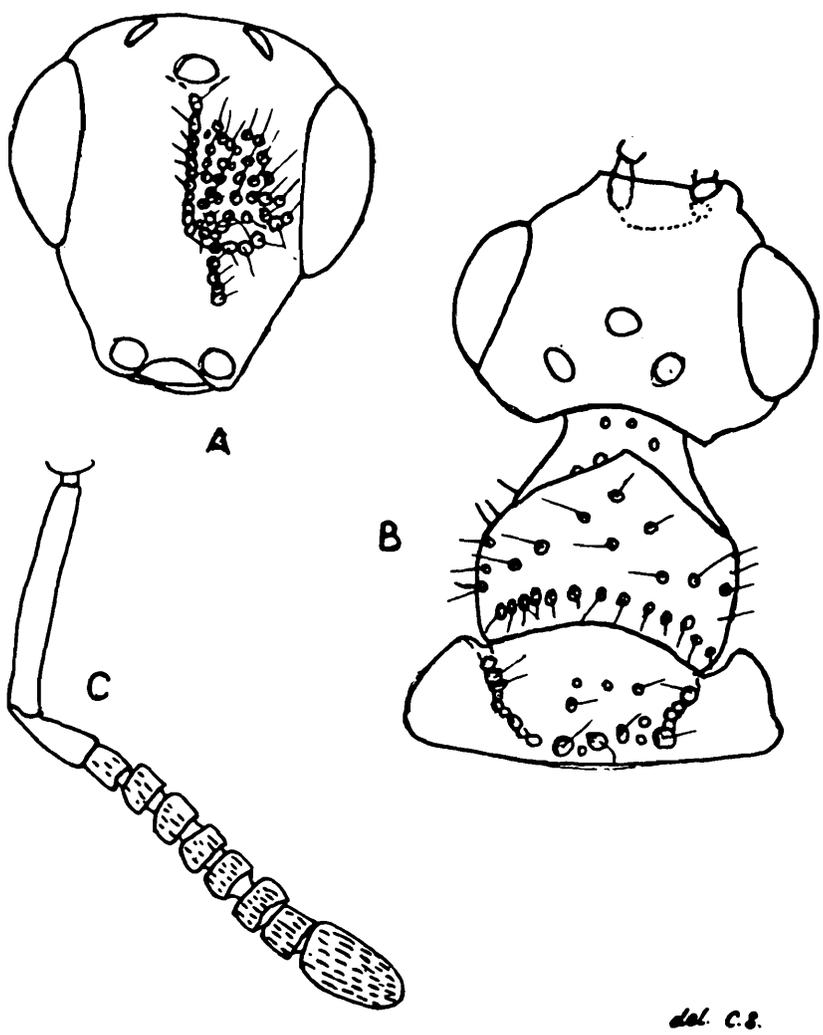

FIG. 151. *Spalangia obscura* Boucek, female : A. Head; B. Head and thorax; C. Antenna. (Modified from Boucek)

Spalangia obscura Boucek

(Fig. 151)

1963 *Spalangia obscura,* Boucek, *Acta Ent. Mus. Natl. Prage,* 35 : 488.
1978 *Spalangia obscura,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 457.

The following description is reproduced from Boucek (1963).

"*Female :* Length 2.90-3.10 mm. Head in facial view rounded triangular, only as long as broad, densely umbilicately punctate, with very narrow interspaces and dense hairs which are not very long; frons distinctly vaulted; scrobes rather shallow, smooth in broad median streak but shallowly broadly rugoso-punctate on sides above antennal toruli. Head in profile rather thick, temple rather sparsely punctured and occipital carina low, in side view nearly four times narrower than eye, this very large, short-oval; gena shorter than eye width, with distinct sulcus; antennal socket weakly raised. Antenna not long, distinctly widened toward tip; scape longitudinally striate, rather dull, fully as long as five following segments combined; pedicellus fully twice as long as wide, about 1.6 times as long as first funicle segment, this 1.2 times as long as broad, the second to seventh funicle segments transverse, the second about 1.2 times, the seventh almost twice as broad as long, all broadly separated from each other, increasing in width; clava hardly twice as long as wide, shorter than three preceding segments together

Pronotal collum dull, granulate-rugulose, with broad piliferous punctures before the collar; this rather long, nearly parallel-sided, immargined anteriorly, without distinct regular cross-line posteriorly (punctures here, however, deeper), all over densely umbilicately punctate except the smooth belt at hind margin, interspaces at median line distinct, broad, otherwise very narrow, laterally even indistinct. Mesoprescutum densely rugoso-punctate and impressed at median carina. Scutellum with distinct, coarsely crenate cross line, umbilicately punctate except in median third; frenum forming a narrow belt taking one-fifth, not broader than metanotum. Propodeum with median double alveolate row moderately narrowed in the middle, median carina not raised; lateral plicae distinct behind spiracles, arched, bordered by crenate furrow on inner side, lateral parts beyond the coarsely alveolate, shallow spiracular furrow deepened in a broad fovea behind, irregularly rugoso-alveolate; posterolateral corner sharply angular, but blunted. Mesopleura smooth on elevated parts, with coarse subalar rugae, impressions alveolate; anterior oblique impression connected sculpturally by a groove at precoxal edge with round precoxal pit and with broad, sinuate episternal scrobe. Hind trochanter above with distinct callus. Fore wing with abundant hairs on cubital fold and below distal half of submarginal vein; longest marginal ciliae slightly longer than stigmal vein; the latter strongly bent, about as long as prestigma, postmarginal vein hardly longer.

Abdominal petiole fully twice as long as broad, parallel-sided, with numerous erect hairs laterally; longitudinal carinae defining a median groove, sublateral carinae weak and less regular Gaster ovate, polished, second tergite broadly emarginate posteriorly, in the middle as long as space between basal fovea and hind margin of first tergite and almost three times shorter than the third. Ovipositor tip hardly exserted.

Body black, without distinct metallic lustre; tarsi of all legs testaceous, more or less infuscate at claws. (The larger female is the holotype).

Male : Unknown."

Type locality Malaya; Philippines; India : Kamalashile (Karnataka)

Host : Tirathaba mundella Waler

Spalangia nigroaenea Curtis

(Fig. 152)

1839 *Spalangia nigroaenea,* Curtis, *Brit. Ent.,* 16 : 740.
1850 *Spalangia homalaspis,* Förster, *Verh. Naturh. Ver. Rheinlande,* 7 : 505.
1851 *Spalangia astuta,* Förster, *Verh. Naturh. Ver. Rheinlande,* 8 : 1.
1913 *Spalangia muscidorum,* Richardson, *Psyche,* 20 : 38.
1932 *Spalangia abenabooi,* Girault, *Hym. Nova. Aust.,* 2 : 1.
1932 *Spalangia sundaica,* Graham, *Austral. Council Sci. and Indus. Res.,* 31 : 22,24.
1933 *Spalangia mors,* Girault, *New Ins.,* 1.
1963 *Spalangia nigroaenea,* Boucek, *Acta Ent. Mus. Natl. Pragae,* 35 : 448.
1969 *Spalangia nigroaenea,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 52.
1978 *Spalangia nigroaenea,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 457.
1979 *Spalangia nigroaenea,* Krombein *et al.,* Hymen. N. America, 1 : 780.

Pronotal collar almost flat between front margin and transverse line of punctae behind; funicular segments in female longer than thick; head viewed in front 1.25 times as long as wide.

The following description is reproduced from Boucek (1963) :

"Female : Length 2.90-3.80 mm. Head umbilicately punctured with interspaces generally about as wide as punctures themselves, in outline distinctly longer than broad; genae feebly converging toward mouth; eyes moderately prominent, their longer diameter as long as gena; genal sulcus clearly cut. In side view head not thick, temple behind centre of eye very narrow, nearly three times as narrow as shortest eye diameter; antennal socket weakly raised but protruding forward. Scape rather shiny, superficially rugulose, very slender, as long as 5½ following segments as 7 : 4.5, the latter about twice as long as broad, the following funicle segments decreasing

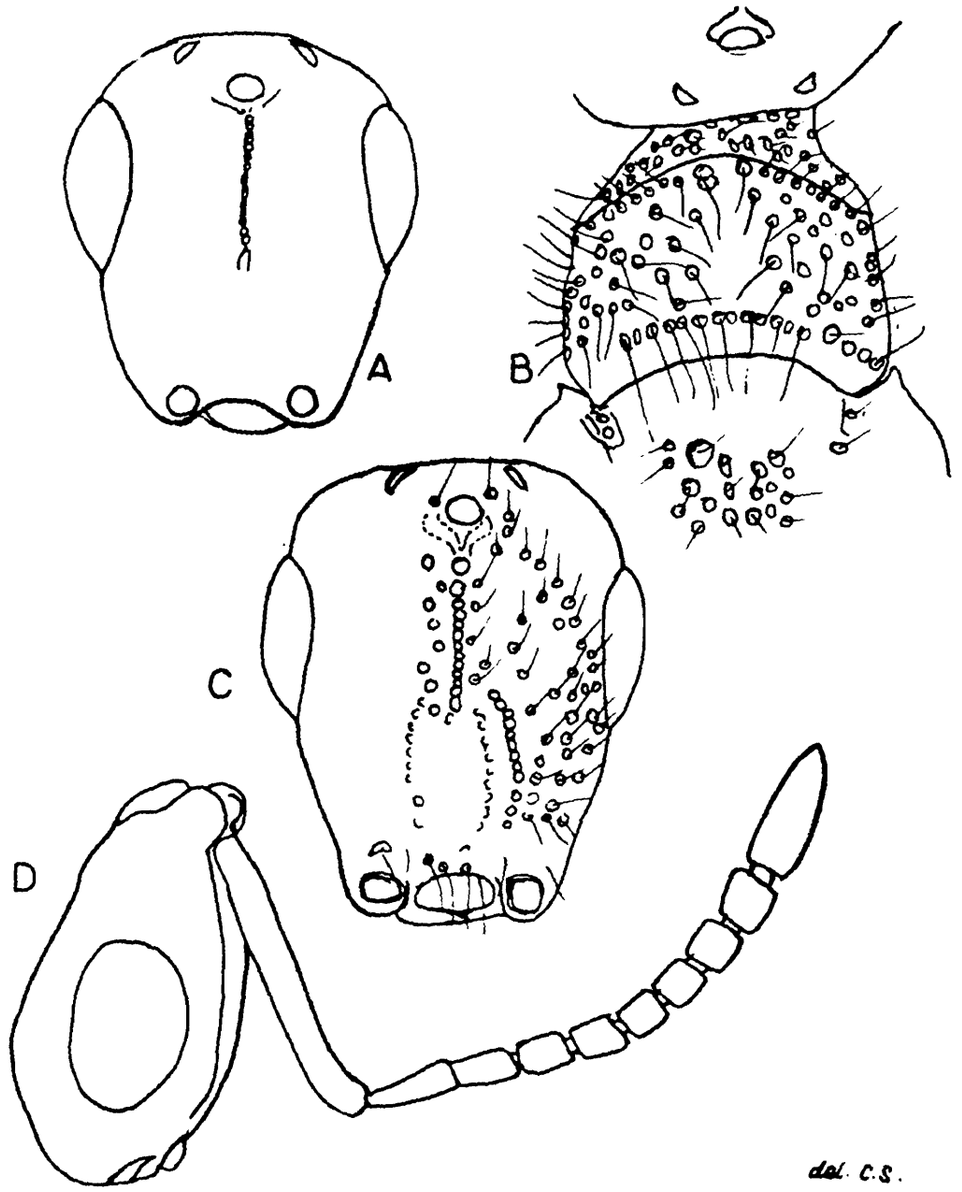

FIG. 152. *Spalangia nigroaenea* Curtis, female : A. Head; B. Pronotum; C. Head; D. Head and antenna.

in length, distal ones usually still slightly oblong, rarely quadrate; club very narrow, as long as 2.3-2.5 preceding segments together, usually distinctly bisegmented.

Pronotum with deep caudal crenulate cross-line parallel to hind margin; collar subpentagonal, distinctly ridged anteriorly except a narrow interruption at meson, the ridge bordered by a row of punctures; disc smooth mesad, the submedian parts with scattered umbilicate punctures becoming denser and denser on the sides, often

rugose on lateral panels. Impunctate part of mesoprescutum polished, sculptured disc very densely umbilicate-punctate, with a smooth median line. Scutellum smooth except one to three punctures in lateral corners, with distinct frenal cross line, frenum forming a transverse belt usually narrower than ⅓ of scutellar length, but somewhat broader than the metanotum. Propodeum with regular double median row of small alveolae, median carina developed only anteriorly, where it expands triangularly, it is hardly raised however; plicae rather irregular, bordered inside by transverse dots; spiracular furrow irregular, the sublateral area outside it dull, more or less rugoso-punctured; lateral callus not very densely hairy, postero-lateral corners short, narrow, but blunted at apex; nucha short, smooth. Basal cell of fore wing and basal and cubital folds bare; stigmal vein strongly curved, shorter than the prestigma. Trochanter of hind leg with moderate callus above.

Abdominal petiole somewhat expanded anteriorly, about 1.7 times as long as broad, with 7-10 longitudinal carinae, laterally with some erect hairs. Gastral tergites extremely finely granulate at magnification of about 60 times.

Body often with a strong bronzy lustre; tarsi testaceous except tips.

Male : Head only as long as broad, with considerably protruding eyes. Scapus hardly 1.5 times as long as eye length, about as long as the following three segments combined; first funicle segment about 3.5 times as long as broad, as long as clava, about 2.5 times as long as pedicellus and by ⅓ longer than the second funicle segment; this and the following funicle segments subequal, each fully twice as long as broad. Abdominal petiole fully as long as propodeum, about 2.3 times as long as broad, with abundant hairs laterally. Phallus intensively sclerotized, dark brown, very narrow and long, about as long as width of gaster and 6.5 times as long as broad. Length of body 2.5-2.5 mm."

Type locality : New Brunswick and Ontario

Distribution : Cosmopolitan

Hosts : Lyperosia exigua Meij., *Musca sorbens* Wd., *M. terr-aereginae* Jhnst. et Bancr., *M. vetustissima* Walk., *Phaonia querceti* Bche., *Stomoxys calcitrans.*

Spalangia gemina Boucek

(Fig. 153)

1963 *Spalangia gemina,* Boucek, *Acta Ent. Mus. Natl. Pragae,* 35 : 484.

1978 *Spalangia gemina,* Boucek, Subba Rao, Farooqi, *Orient. Ins.,* 12 (4) : 457.

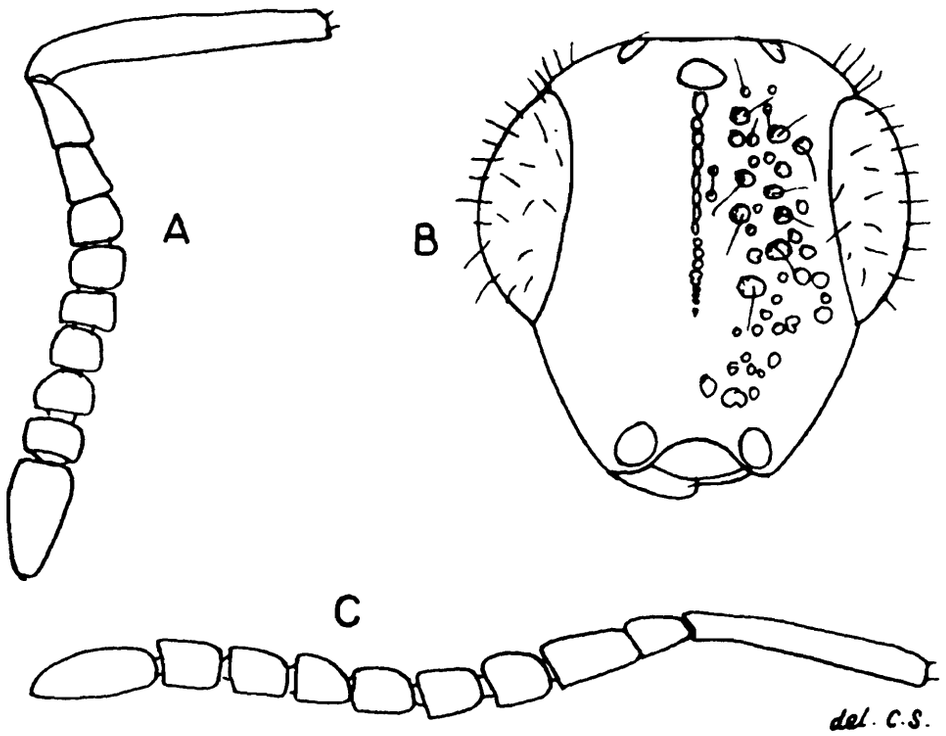

FIG. 153. *Spalangia gemina* Boucek : A. Antenna, female : B. Head, female : C. Antenna, male. (Modified from Boucek).

The following is reproduced from Boucek (1963) :

"This species is closely related to *S. cameroni* Perk., but its body is somewhat stronger, more densely pubescent, antennae in both sexes shorter, distal funicle segments in female distinctly transverse, in male subquadrate; head is shorter, in female hardly longer than broad, subtriangular, pronotum duller, with hairs generally situated on tubercle like elevations of the sculpture.

Female : Head in facial view subtriangular, almost as wide as long, with large, moderately prominent eyes and straightly converging genae; frons densely umbilicately punctate, interspaces very narrow to about as wide as punctures; scrobes relatively deep, transversely ribbed in deepest (lateral) parts, smooth in the middle except fine rugosity between antennal toruli. In side view head about twice as long as thick, outline in median 3/5 almost parallel sided; eye oval, its orbitae furrow-like; gena shorter than eye width, crowdedly, almost rugosely punctate; antennal socket hardly raised; temples also densely rugoso-punctate between orbital carina and weak occipital carina. Antenna short, very slightly thickened at tip; scape rather dull, granulate, slender, fully as long as 5 following segments combined, but only 1.3 times as long as the eye; pedicellus fully twice as long as wide, about 1.2 times as long as first funicle segment, this 1.5 times as long as broad; second funicle segment quadrae, following ones transverse, the seventh 1.3 to 1.5 times as

broad as long; clava almost as long as three preceding segments together, less tha 2.5 times as long as broad.

Pronotal collum transversely carinaceous; collar not margined anteriorly, with very deep, arched, coarsely crenate cross-line off hind margin; all surface before this furrow coarsely reticulate rugose, except a more or less low triangle just at cross line, piliferous punctures elevate, tubercle-like and mostly situated on highest points of sculpture; disc sometimes with a shallow longitudinal groove. Mesoprescutum with median longitudinal raised carina dividing two large irregular impressions posteriorly and rugulose punctate areas anteriorly. Scutellum with coarse cross line in posterior quarter and several punctures sublaterally. Metanotum as short as frenum. Propodeum with double alveolate row triangularly expanded anteriorly; median carina in front half only, not high; plicae very low, vague, discernible in posterior ⅔ only, bordered on inner side by a belt of shallow irregular puncturation; nucha very short, with deep alveolae as its base; spiracular furrows very narrow, deepened into a fovea posteriorly; a smooth streak outside of stigmal slot; lateral fimbriae not dense; posterolateral corner short, subrectangular. Prepectus similar to that of *S. cameroni*. Mesopleura horizontally carinaceous below subalar pit, smooth behind and beneath, except the alveolate bottom of anterior oblique impression, often connected by a broad punctate belt above precoxal edge with the deep precoxal pit, and except the triangular episternal scrobe; the latter mostly connected by a crenate line with precoxal pit. Fore wing mainly bare on upper surface below submarginal vein; longer than the short, abruptly bent stigmal vein, postmarginal vein shorter than the stigmal.

Abdominal petiole about 1.4 times as long as broad, almost parallel-sided, bare, with distinct carinae, the median replaced by two, separated by a groove similar to the others. Gaster slender-ovate, polished, second tergite distinctly emarginate, in the middle half as long as the third. Ovipositor sheaths scarcely exserted.

Body black, hardly with any metallic tinge; tarsi pale, testaceous except dark claw segments. Length (measured while body stretched with head forward; with head drooping usually 0.3-0.4 mm. less) 3.1-4.1 mm, the holotype 3.5 mm. (with head drooping 3.2 mm.)

Male : Head slightly shorter than broad, thicker distinctly thicker than in *cameroni* at centres of eyes, but rather abruptly less thick below eye level behind; genae dull, crowdedly punctate. Scapus scarcely as long as four following segments combined, its length to the flagellum as 18 : 58; pedicellus in profile almost 1.5 times as long as broad, first funicle segment twice as long as broad and about 1.7 times as long as pedicellus; funicle segments 2 to 7 subequal, each quadrate to very slightly oblong, hardly narrowed at proximal end, broadly separated from each other; longest hairs of the pubescence

not exceeding one-quarter of the segment width; clava as long as two preceding segments combined, about 2.5 times as long as broad. Length 2.6-3.5 mm.

Type locality : Mauritius"

Distribution : Mauritius; India : West Bengal, Karnataka, Tamil Nadu; Thailand; Fiji Islands; Malaya; S. America (Venezuela)

Hosts : Pupae of *Dacus dorsalis* Hend, Hyperparasite of *Metagonistylum minense* Tns., *Paradalaspis cyanescens* auct. *Adisura atkinsoni* Moore, *Cryptophlebia pallifimbriana* auct.

Spalangia cameroni Perkins

(Fig. 154)

1910 *Spalangia cameroni,* Perkins, *Fauna Hawaii, Hym. Sup.,* 2 : 656.
1920 *Spalangia muscidarum* ver. *texensis,* Girault, *Proc. US nat. Mus.,* 58 : 213.
1940 *Spalangia melanogaster,* Masi, *Bol. Roy. Lab. Ent. Agr. Portici,* 3 : 295.
1951 *Spalangia atherigonae,* Risbec, *Mem. Inst. Franc. d'Afr. Noire,* 13 : 361.
1963 *Spalangia cameroni,* Boucek,.*Sb. ent. Odd. nar. Mus. Praze,* 35 : 454.
1965 *Spalangia cameroni,* Boucek, *Acta Ent. Mus. nat. Pragae,* 36 : 597.
1969 *Spalangia cameroni,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 53.
1978 *Spalangia cameroni,* Boucek, Subba Rao & Farooqi, *Orient, Ins.,* 12 (4) : 457.
1979 *Spalangia cameroni,* Krombein *et al.,* Hymen. N. America, 1 : 779.

The following description is reproduced from Boucek (1965) :

Pronotal collar rugulose anterolaterally; discal triangle of collar smooth; rounded off in front; pronotum with an isolated transverse line of setigerous punctae near hind margin. The following description is reproduced from Boucek (1963) :

"*Female :* Head umbilicately punctate with wide interspaces except at inner orbitae and on cheeks, distinctly longer than broad; genae moderately converging toward mouth and slightly longer than the relatively small eyes; genal sulcus indistinct; in side view head twice as long as thick, with width of temple 3/5 of the eye width; antennal socket distinctly raised; scape matt, very finely punctulate-granulate, very slender and long, equal in length to six following segments combined; pedicel longer than the first funicle segment as 6.5 : 4.5; basal funicle segments distinctly elongate, distal ones quadrate; club nearly three times as long as broad.

Pronotum with distinct caudal crenate cross-line, this parallel to hind margin; collar anteriorly rounded, immargined, surface here and on the sides densely rugose-punctured, leaving a broadly triangular disc smooth, at most with a few scattered punctures only, often with a median, longitudinal, shallow groove; hairs of pronotum mainly placed not on tubercles on sculpture but in pits; pronotal collum transversely rugulose. Disc of mesoprescutum irregularly

rugose-punctured with a smooth median line. Scutellum smooth, but with several punctures in lateral corners, with a deep crenate cross-line; frenum occupying a little less than ⅓, forming a belt usually not broader than the metanotum. Propodeum with median double alveolate row strongly dilated anteriorly; submedian smooth areae bordered by crowded puncturation laterally and posteriorly, inside of the regularly arched plicae; these ending at the small, smooth nucha; sublateral area outside of the rather regular, crenate spiracular furrow, nearly smooth; lateral fimbriae not dense; posterolateral corner sharply angular Prepectus large, rugose, triangular, but extended far downward, its anterior margin elevated like a massive blunted edge sending a branch toward tegula. Mesopleura smooth, with anterior impression broad and coarsely crenate, episternal scrobe narrow, crenate, usually dilated into a pit on centre of mesopleura, this pit usually connected by a row of punctures with precoxal pit; precoxal suture edge-like, bordered by irregular punctures. Fore wing with basal cell and basal and cubital folds bare; stigmal vein bent, hooklike, hardly shorter than the postmarginal, but fully as long as the prestigma.

Abdominal petiole about 1.8 times as long as broad, maximum width at anterior corners. Gastral tergites usually polished, the second at meson often shorter than half the third tergite.

Body black, sometimes with faint bronzy reflections; tarsi testaceous with black claw segments. Length 2.5-3.3 mm.

Male : Head as long as wide, more triangular, the subrugose umbilicate punctures between inner eye orbita and antennae often very shallow, superficial, gena ⅔ the eye length, rather shiny, interspaces at least half the width of punctures. Occipital carina meeting hypostomal carina at right angle. Scapus rather shiny, the fine sculpture being more longitudinally rugulose, reaching anterior ocellus, nearly as long as four following segments combined; first funicle segment about twice as long as pedicel, twice to 2.5 times as long as broad, and almost 1.5 times as long as the second funicle segment; the latter hardly longer than any of the following five segments which are all oblong, about 1.4 times as long as broad; incisures between the individual segments rather wide. Abdominal petiole about 2.3 times as long as broad. Body more vividly metallic green, legs sometimes bluish; tarsi usually darkened in distal half. Body length 2.4-3 mm."

Type locality : New Hampshire

Distribution : Cosmopolitan (except North America and Australia)

Hosts : Anastrepha suspensa (Loew), *Fannia femoralis* (stein.), *Heamatobia irritans* (Linn.), *Hippelates collusor* (Towns.), *Musca domestica* (L.), *Muscina* sp., *Ophyra sp. Phaenicia* sp., *Stomoxys calcitrans* (Linn.), *Atherigona quadripunctata* Rossi, *Lyperosia*

irritans (L.), *Ravinia striata* F., *Phaonia guerceti* Bche., *Coprosarcophaga haemorrhoidalis* Flln., *Dacus cucurbitae* Coq., *Pegomyia hyoscyami* pz. (Gersdorf, 1960, *Zeitschr. angew. Ent.*, 47 : 402.)

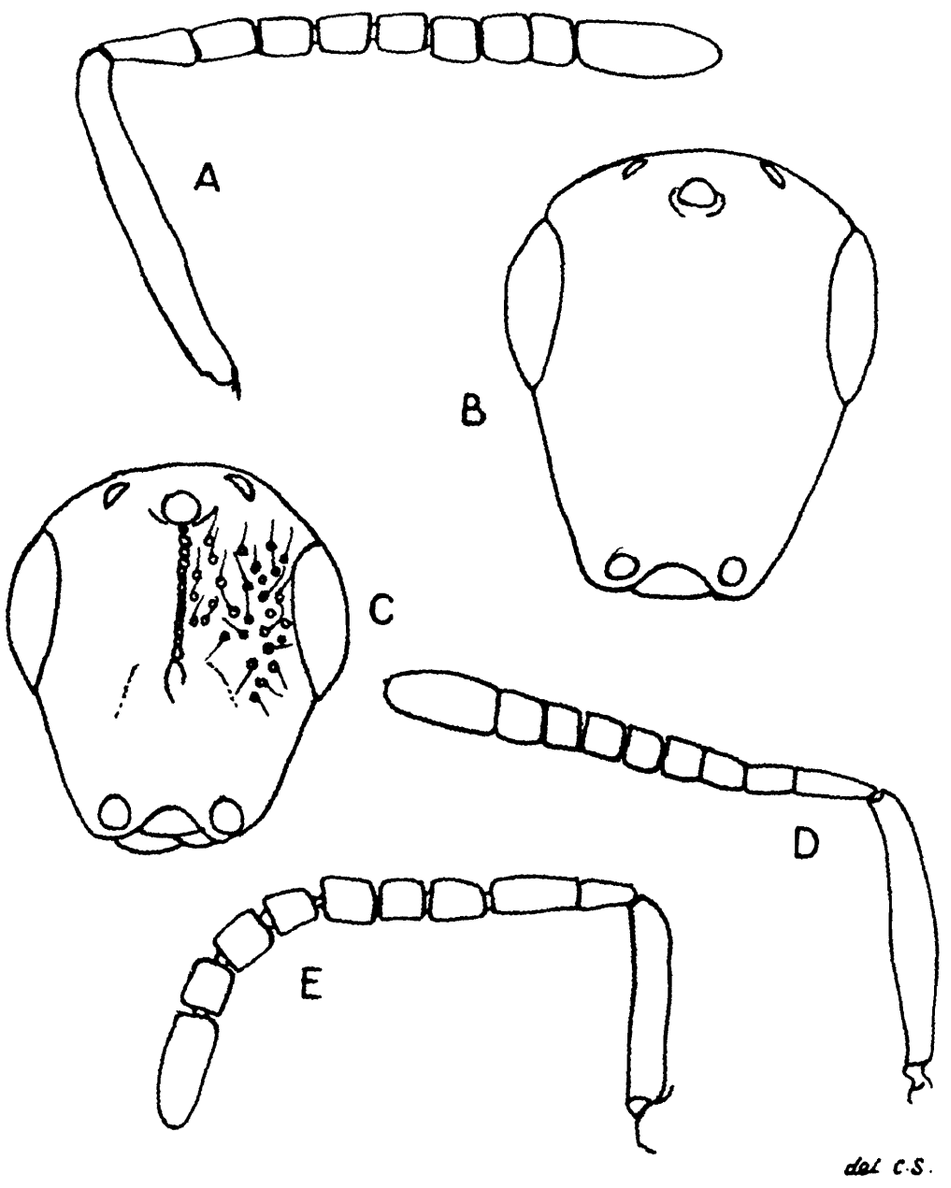

Fig. 154. A-B. *Spalangia cameroni* Perkins, female : A. Antenna; B. Head; C-E. *Spalangia endius* Walker : C. Head, female; D. Antenna, female; E. Antenna, male (Modified from Boucek).

Spalangia endius Walker

(Fig. 154)

1839 *Spalangia endius,* Walker, *Monogr. Chalcid.*, 2 : 96.

1916 *Spalangia muscidarum* var. *stomoxysiae,* Giraulat, *Soc. Ent.*, 31 : 57.

1917 *Spalangia philippinensis,* Fullaway, *Proc. Hawaii, ent. Soc.*, 3 : 292.

1932 *Spalangia orientalis,* Graham, *Austral. Council. Sci. and Indus. Res.,* 31 : 21.
1951 *Spalangia stomoxysiae,* Beck in Muesebeck *et al., Hymen. N. America,* 2 : 535.
1963 *Spalangia endius,* Boucek, *Sb. ent. Odd. nar. Mus. Praze,* 35 : 438, 457.
1965 *Spalangia endius,* Boucek, *Acta ent. Mus. nat. Pragae,* 36 : 598.
1969 *Spalangia endius,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 53.
1978 *Spalangia endius,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 457.
1979 *Spalangia endius,* Krombein *et al.,* Hymen. N. America, 1 : 779.

Pronotal collar convex, sparsely with setigerous punctae, transverse punctate line before hind margin often angulate in the middle; terminal funicular segments transverse in female, quadrate in male; pronotal collar punctae anterolaterally.

The following description is reproduced from Boucek (1963) :

"*Female :* Head rather sparsely umbilicately punctured, slightly oblong in outline, with genae moderately converging and shorter than the longer diameter of the non-prominent eyes. Head in side view twice as long as thick, with temple half as broad as eye width. Scape rather matt, granulated, quite slender, fully as long as five following segments combined; pedicel twice as long as second funicle segment; first funicle segment one and a quarter times longer than wide, the following segments quadrate, distal ones usually slightly transverse; club as long as 2.5 preceding segments together.

Pronotal collar semiglobose, equally rounded, not margined, with distinct caudal crenulate cross-line which is removed from hind margin at meson; collar with scattered umbilicate punctures except along median line, without any ridge or rugosity. Disc of mesoprescutum irregularly rugoso-punctured, usually with a smooth median longitudinal line. Scutellum with a few punctures sublaterally in front of the distinct frenal cross-line; frenum occupying ⅓ and forming a belt slightly broader than metanotum. Propodeum with subrectangular to obtuse postero-lateral corners, nucha short and smooth; median alveolate double row strongly narrowed posteriorly, with a fine carina only in anterior half. Fore wing bare in basal third, costal cell hairy only in its distal fifth, longer than marginal vein as 35 : 23; stigmal vein somewhat shorter than prestigma, hook like, as long as the postmarginal vein.

Abdominal petiole 1.7 times as long as broad. Gastral tergites polished, the third sometimes with a vaguely indicated granulation on disc.

Body black, very rarely with a slight metallic tinge (more often in male than in female) : tarsi testaceous except the dark tips. Length 2-3 mm.

Male : Head hardly shorter than long, with eyes more protruding than in female. Antennal scapus about as long as pedicellus plus basal two funicle segments ; first funicle segment cylindrical, nearly to fully three times as long as broad, usually less

than twice as long as pedicellus, in one Burnside specimen fully twice as long as this; second funicle segment slightly but distinctly longer than broad, the third to seventh hardly longer than broad or quadrate, all with wide incisions between the individual funicle segments; clava about 2.5 times as long as wide, hardly as long as two preceding segments together. Propodeal median double groove subparallel-sided, nucha more distinct than in female; petiole fully twice as long as wide. Phallus rather weakly sclerotized, brown, relatively small, about ¾ as long as the abdomen width, not very narrow, 5.5 times as long as broad. Length of body 1.9-2.6 mm."

Type locality : Ontario

Distribution : Cosmopolitan

Hosts : Trypetidae : *Ceratitis capitata* (Wied.), *Dacus dorsalis* Hendel, *D. ferrugineus* F., *Fannia leucosticta* (Meig.), *F. scalaris* (F.), *Haematabia irritans* (L.), *Musca domestica* Linn., *M. domestica vicina* Macq., *M. sorbens, Muscina* sp. *Ophyra anthrax* Meig., *Stomoxys calcitrans* (Linn.), *Sarcophaga* sp., Calliphoridae : *Chrysomyia albiceps* Wd., *C. megacephala* F., *Hydrotaea australis* Mall., *Lyperosia exigua* Meig.,*Phaonia querceti* Bche., *Coprosarcophaga haemorrhoidalis* Flln., *Ravinia striata* F., *Sarcophaga effrenata* Wlkr., *S. impar* Aldr., *S. sueta* Wulp.

SUBFAMILY CEROCEPHALINAE

1856 *Spalangoidae* (partim), Förster, *Hym. Stud.*, 2 : 18, 22, 40.
1878 *Spalangiina* (partim), Thomson, *Hym. Scand.*, 5 :
1897 *Spalanginae* (partim), Ashmead, *Proc. ent. Soc. Washington*, 4 : 248.
1904 *Spalanginae* (partim), Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 332.
1909 *Spalangini* (partim), Schmiedeknecht, *Gen. Ins.*, 97 : 384.
1946 *Cerocephalinae*, Gahan, *Proc. US nat. Mus.*, 96 : 349.
1963 *Cerocephalini*, Peck, *Canad. Ent.*, 30 : 599.
1964 *Cerocephalinae*, Boucek in Peck *et al.*, *Mem. ent. Soc. Canada*, 34 : 28.
1969 *Cerocephalinae*, Hedqvist, *Proc. ent. Soc. Washington*, 71 : 449.
1969 *Cerocephalinae*, Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 56.
1979 *Cerocephalinae*, Krombein *et al.*, Hymen. N. America, 1 : 780.

Head large, mandibles with 2-5 teeth; antennae inserted about the level of lower orbital border; funicle in female with 5-6 and in male sometimes 7 segments; antennal sockets separated by frontal carina, appearing like a horn in dorsal view of head; face impressed, hind tibial spurs double, fore wing with 2 or one spot, vein *pm* shorter than *st*.

KEY TO GENERA

1. Antennae inserted on level of lower orbital border; in female with 6 and in male with 7 segments — *Cerocephala* Westwood

Antennae inserted distinctly below level of lower orbital border — 2

2. Funicular segments 5 in female, 6 in male; propodeum reticulate — *Choetospila* Westwood

Funicular segments 5 in female; propodeum smooth — *Choetospilisca* Hedqvist

Cerocephala Westwood

1832 *Cerocephala,* Westwood, *Mag. Zool.,* 2 : 4.
1833 *Epimacrus,* Walker, *Ent. Mag.,* 1 : 368.
1848 *Sciatheras,* Ratzeburg, *Ichn. d. Forstin,* 2 : 209.
1876 *Cerocephala,* Thomson, *Hym. Scand.,* 4 : 207, 210.
1904 *Cerocephala,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 334.
1909 *Cerocephala,* Schmiedeknecht, *Gen. Ins.,* 97 : 385, 386.
1917 *Parasciatherus,* Masi, *Novit. Zool.,* 24 : 189.
1920 *Proamotura,* Girault, *Ins. Inscit. mentr.,* 8 : 143.
1946 *Cerocephala,* Gahan, *Proc. US nat. Mus.,* 95 : 357.
1952 *Cerocephala,* Nikolskaya, *Chalcid. Fauna USSR,* 250, 255.
1963 *Cerocephala,* Hedqvist, *Stud. Forst. Suecica,* 11 : 127.
1964 *Cerocephala,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 28.
1969 *Cerocephala,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 57.
1969 *Cerocephala,* Headqvist, *Proc. ent. Soc. Washington,* 71 (3) : 459.
1979 *Cerocephala,* Krombein *et al.,* Hymen. N. America, 1 : 781.

Head subovate, with a projection between antennae; viewed above appearing like a spine; antennae long and stout, inserted in the middle of face, in female with 9 segments, appearing only 8 segments; scape long, slender; funicle slightly swollen apically; club fused with funicle, shortly pointed, face below, with an acute tubercle on both sides, mesonotum polished, parapsidal furrows complete, scutellum flat; propodeum horizontal, without median carinae and lateral folds; densely punctate; fore wing with vein *m* long; fringe at apex very long, vein *pm* and *st* short; legs stout; petiole hardly as wide as thick; abdomen shortly oval, first tergite largest, ovipositor stout slightly projecting; antennae; in male with long hairs; petiole longer

Type-species : Cerococephala cornigera Westwood

Cerocephala dinoderi Gahan

1925 *Cerocephala dinoderi,* Gahan, *Philippine J. Sci.,* 27 : 100-102.
1969 *Cerocephala dinoderi,* Hedqvist, *Proc. ent. Soc., Washington,* 71 (3) : 460.
1978 *Cerocephala dinoderi,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 439.

Type locality : Philippines

Distribution : Cosmopolitan

Host Sitophilus oryzae; Dinoderus minutus (F.)

Choetospila Westwood

1874 *Choetospila,* Westwood, *Thes. ent. Oxon.,* 157.
1913 *Spalangiomorpha,* Girault, *Mem. Queensland Mus.,* 2 : 333.
1921 *Choetospila,* Waterston, *Rep. Grain Pests Comm. R. Soc.,* 9 : 19.
1946 *Choetospila,* Gahan, *Proc. US nat. Mus.,* 96 : 352.
1952 *Chaetospila,* Nikolskaya, *Chalc. Fauna USSR., 250.*
1964 *Choetospila,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 28.
1969 *Choetospila,* Graham, *Bull. Brit. Mus. Nat. Mist. (Ent.)* Suppl., 16 : 61.
1969 *Choetospila,* Headqvist, *Proc. ent. Soc. Washington,* 71 (3) : 451.
1979 *Choetospila,* Krombein *et al.,* Hymen. N. America, 1 : 780.

Head quadrate; mandible with 4 teeth, maxillary palpi with 4 segments, first and third short; labial palpi with 2 segments; antennae with 8 segments and one annellus; segments 2-7 as long as thick, terminal segment elongate oval; petiole short; abdomen ovate; vein with long fringe; vein *sm* reaching to basal 0.30; *st* very short; with a bundle of short bundle of bristles between *sm* and *m.*

Differs from *Cerocephala* in short petiole and 8 segmented antennae.

Type-species : Choetospila elegans Westwood

Choetospila elegans Westwood

1874 *Choetospila elegans,* Westwood, *Thes. ent. Oxon.,* 157.
1913 *Spalangia metallica,* Fullaway, *Proc. Hawaii, ent. Soc.,* 2 : 286.
1913 *Spalangiomorpha fasciativentris,* Girault, *Mem. Queensland Mus.,* 2 : 334.
1951 *Spalangia rhizopertha,* Risbec, *Mem. Inst. Fr. Afr. Noire,* 13 : 365.
1951 *Cerocephala oryzae,* Risbec, *Mem. Inst. Fr. Afr. Noire,* 13 : 366.
1963 *Choetospila elegans,* Boucek, *Acta ent. Mus. Nat. Pragae,* 35 : 505.
1969 *Choetospila elegans,* Graham, *Bull. Brit. Mus. Nat. Hist.* (Ent.) Suppl., 16 : 61.
1969 *Choetospila elegans,* Headqvist, *Proc. ent. Soc. Washington,* 71 : 451.
1978 *Choetospila elegans,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 440.
1979 *Choetospila elegans,* Krombein *et al.,* Hymen N. America, 1 : 780.

"Aeneo-viridis, nitida, laevis; capite et collare fulvis, pone oculos et ad latera anneo-tinctis; dorso thoracis aeno; metanoto cum pedunculo brevi, fulvo; pedibus fulvis; alis hyalinis apicibus iridescentibus, fasciculo setarum nigrarum, nubila substigmaticali fulvescenti.

Long. Corp. lin. 1; expans. alar. lin 1⅔."

Type locality : "India"

Distribution : Cosmopolitan, India : Delhi, Tamil Nadu, Karnataka

Host : Parasitic on beetles in stored grain

Choetospilisca Headqvist

1969 *Choetospilisca,* Hedqvist, *Proc. ent. Soc. Washington,* 71 : 452.
1979 *Choetospilisca,* Krombein *et al., Hymen. N. America,* 1 : 781.

Type-species : Choetospilisca tabidoides

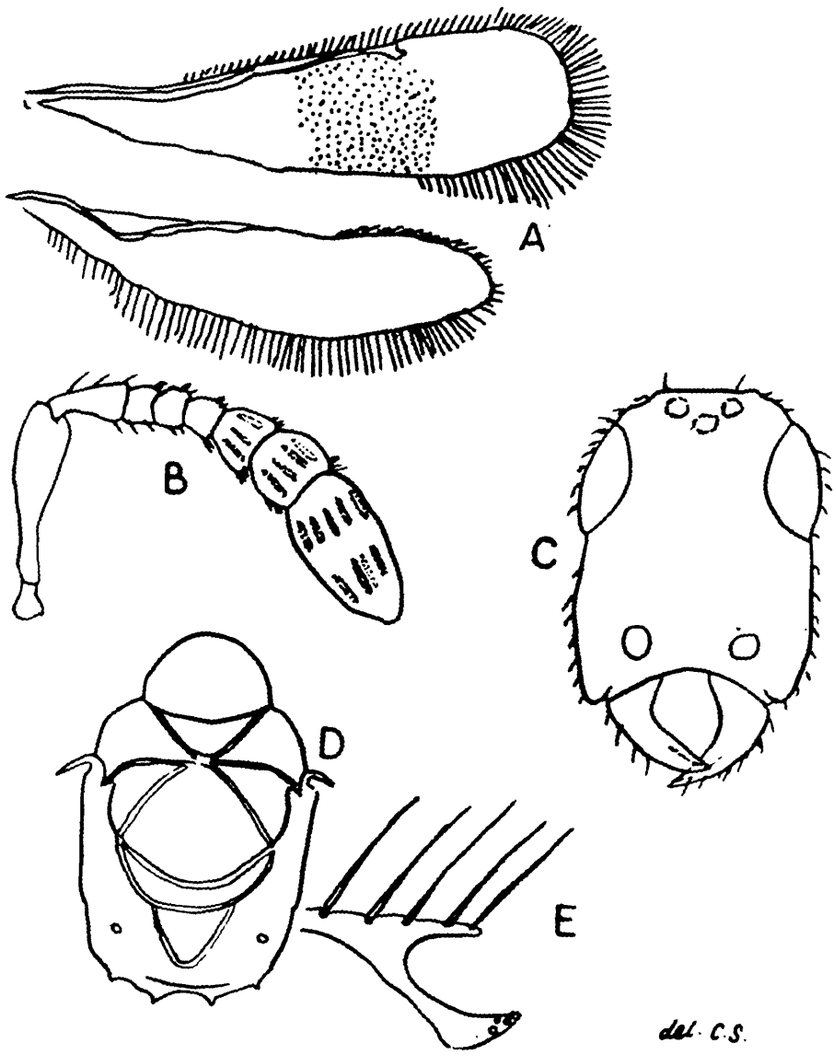

FIG. 155. *Choetospilisca indica* Mukerjee : A. Fore wing and hind wing; B. Antena; C. Head; D. Thorax; E. Stigmal area of fore wing.

Choetospilisca indica Mukerjee

(Fig. 155)

1975 *Choetospilisca indica,* Mukerjee, *Mem. School Ent.,* 4 : 35.
1978 *Choetospilisca indica,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 440.

Female : Length about 1.60 mm. Body non-metallic, brown; head reddish-brown, vertex dark brown, eyes and ocelli dark brown; mandibles reddish-brown; antennae concolorous with head; scape brown; except brown middle coxa all legs yellowish-brown; fore wing hyaline, except for the transverse pale brownish infuscation extending from the middle of vein *m* to a little beyond vein *st;* abdomen dark brown, ovipositor sheath brown, tip darker

Head viewed in front length to width 100 : 68; smooth; ocellocular space about 3 times the ocellar diameter; front ocellar space about 0.75 of ocellar diameter, interocellar space about 2 times ocellar diameter; eyes very sparsely and finely pubescent; mandibles long, about 0.32 of head length; sickle-shaped, bidentate, with the inner tooth smaller than the outer; antennae with 8 segments : 1.1.5.1; antennal sockets far below the lower orbital border and close to clypeus; scape distinctly clavately swollen apically, about 2.60 times longer than thick; pedicel about 2 times longer than thick and about 0.50 of scape; funicular segments 1-3 subequal, about 0.50 of pedicel and almost as long as thick; fourth segment about 0.83 times as long as thick and about 1.25 times the third segment, abruptly much thicker than third; fifth segment longest, about 1.20 times the preceding sgement; club solid, about 1.70 times longer than thick and subequal to preceding 3 funicular segments combined.

Thorax smooth, shiny, with a pair of bristles near the posterior margin on scutellum; propodeum without median carina, spiracle far removed from the anterior margin; fore wing length to width 100 : 28; veins *sm* : *m* : *pm* : *st* ratio 90 : 100 : 5 : 13; vein *sm* with 6 setae directed forward, *m* with 28 setae, *pm* with 3 setae; marginal fringe 0.37 of the wing width; hind wing length to width 100 : 18, marginal fringe 0.70 of wing width; fore coxa about 2.44 times longer than thick; femur about 2.54 times longer than thick and bout 1.27 times coxa; tibia equal to femur and about 4.66 times longer than thick; tarsus about 0.78 times tibia; metatarsus about 0.25 of tibia and 0.32 of tarsus; second tarsal segment 0.57 of metatarsus; third segment about 0.75 of the second; fourth segment shortest and about 0.66 of the third; fifth segment about 3 times the fourth; middle coxa about 1.40 times longer than thick; femur about 2 times longer than thick and about 1.43 times coxa; tibia about 4.33 times longer than thick and about 1.30 times femur; tibial spur about 0.19 of tibia and about 0.83 of metatarsus; tarsus subequal to fore tarsus and about 0.84 of tibia; metatarus about 0.23 of tibia and 0.27 of tarsus; second tarsal segment 0.83 of metatarsus; third segment about 0.60 of the second; fourth segment shortest and about 0.66 of the third; fifth segment 3 times the fourth; hind coxa about 1.83 times longer than thick; femur about 2.80 times longer than thick and about 1.27 times the coxa; tibia slender, slightly thickened apically, subequal to the middle tibia and about 5 times longer than thick and about 1.70 times

the femur; tibial spur about 0.20 of tibia and 0.60 of metatarsus; tarsus 0.93 of tibia; metatarsus 0.33 of tibia and 0.31 of tarsus; second segment about 0.60 of metatarsus; tarsus 0.93 of tibia; metatarsus 0.33 of tibia and 0.31 of tarsus; second segment about 0.60 of metatarsus; third segment about 0.83 of the second and 0.50 of metatarsus; fourth segment about 0.60 of the third; fifth segment about 2.33 times the fourth segment.

Abdomen smooth, excluding ovipositor about 0.50 of body; petiole subequal to abdomen; ovipositor conspicuously exserted and a little over 0.50 of abdomen.

Type locality : Yercaud (Eastern Ghats)

Tetrarhopala Motschulsky

1863 *Tetrarhopala,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 61.
1938 *Tetrarhopala,* Mani, *Cat. Indian Ins.,* 23 : 107.

Antennae with 9 segments; segments 3, 4 and 5 minute, 6-9 abruptly large, forming a stout, solid, elongate club; tarsi with 5 segments; head rounded, flattened above, convex in front; ocellar triangle flat; eyes oval, slightly bluging; thorax as wide as head; elongate and narrowed behind, convex and gibbous in front; pronotum ovate, with a curved impression; posterior segment short; mesonotum triangular, rounded behind, slightly elevated and tuberculate carinate in the middle; abdomen sessile, slightly convex, slightly larger than thorax, ovate and acuminately pointed behind; tergite 2 large occupying about 0.66 of dorsum; remaining tergite short; legs short; middle tibiae slightly enlarged, spur clavately enlarged; wings hyline, vein *sm* near front margin, vein *st* short, with stigma distinct.

Type-species : Tetrarhopala nigra Motschulsky

Tetrarhopala nigra Motschulsky

1863 *Tetrarhopala nigra,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 26 (3) : 62.
1938 *Tetrarhopala nigra,* Mani, *Cat. Indian Ins.,* 23 : 107.
1978 *Tetrorhopala nigra,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 461.

Length 1.25 mm. "Elongata, subconvexa, nitida, nigra, antennarum medio tibiis trasique rugo-testaceis, unguiculis nigris; capite depresso, vix nitido, postice subconvexo-truncato, fronte subconvexo, oculis ovalis, vix prominuli, antennis capite vix longioribus, antice abrupto clavatis, clava 4 articulatis, articulis aequalibus, submoniliformibus; thorace elongato-triangulari, antice arcuatimangustato, postice truncato, vix nitido, pronoto gibboso, postice truncato, subimpresso, mesonoto medio longituinaliter tibiis claviforme incrassatis."

Boucek et al., believe this species to belongs to Prototrupoidea.

Type locality : Mt. Patannas : Ceylon

FAMILY EUPELMIDAE

1846 *Eupelmidae* (partim), Walker, *Ann. Mag. Nat. Hist.*, 17 : 114.
1856 *Eupelomidae,* Förster, *Hym. Stud.*, 2 : 18, 21, 30.
1872 *Eupelminae,* Walker, *Notes Chalc.*, 5 : 71-88.
1875 *Eupelminae,* Thomson, *Hym. Skand.*, 4 : 11,102.
1896 *Eupelminae,* Howard, *Ent. Amer.*, 1 : 198.
1897 *Eupelminae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 238.
1904 *Eupelminae,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 287.
1909 *Eupelminae,* Schmiedeknecth, *Gen. Ins.*, 97 : 169.
1938 *Eupelminae,* Mani, *Cat. Indian Ins.*, 23 : 80.
1952 *Eupelmidae,* Risbec, *Mem. Inst. Sci. Medagascar,* (E) : 2 : 59.
1979 *Eupelimidae,* Krombein *et al., Hymen. N. America,* 1 : 878.

Mesopleura entire, without femoral impression, greatly bulged out; middle tibia stout, with long, stout spur; mesonotum depressed, or convex; parapsidal furrows more or less distinct; vein *m* long; occiput most usually not margined; body generally slender; antennae long; middle tarsi thickened basally, metatarsus and usually also tarsal segments 2-3 with a double row of stout spines or denticles; pronotum often with longitudinal median groove or carina; propodeum shorter medially than laterally; antennae with annellus one, funicle 7 segments, club solid or triarticulate; middle coxae membranous basally below; prepectus often longer than high, usually convex, sometimes free below.

KEY TO SUBFAMILIES

1. Mesonotum in females always depressed or impressed, concave or subconcave, medially with usually a triangular elevation anteriorly; parapsidal furrows not, or rarely, sharply defined, never short; in males subconcave with the furrows rarely complete, not short, not curved off laterally — Subfamily 1. *Eupelminae*

Mesonotum convex in the sexes, parapsidal furrows, delicate, but always complete, short and strongly curved off laterally, scapulae short — Subfamily 2. *Tanaostigminae*

SUBFAMILY TANAOSTIGMATINAE

1094 *Tanaostigmini,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 287, 291.
1909 *Tanaostigmini,* Schmiedeknecht, *Gen. Ins.*, 97 : 188.
1979 *Eutrichosomatinae,* Burks in Krombein *et al., Hymen. N. America,* 1 : 774.
1979 *Tanaostigmatinae,* Burks in Krombein *et al., Hymen. N. America,* 1 : 878.

This subfamily forms a connecting link between Eupelmidae and Encyrtidae. Howard referred *Tanaostigma* to the Encyrtidae. It is also related to Cleonymidae, especially in males, in the presence of well developed parapsidal furrows; this subfamily is separated from other Eupelmids by the mesonotum convex in both sexes and complete, well developed parapsidal furrows, strongly curved behind. The typical genus *Tanaostigma* Howard. *Eutrichosoma* Ashmead is placed separately as subfamily Eutrichosomatinae in Pteromalidae.

SUBFAMILY EUPELMINAE

1904 *Eupelmini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 282.
1909 *Eupelmini,* Schmiedeknecht, *Gen. Ins.,* 97 : 170.
1938 *Eupelmariae,* Mani, *Cat. Indian Ins.,* 23 : 80.
1979 *Eupelminae,* Krombein *et al., Hymen. N. America,* 1 : 880.

Head mostly triangular; vertex not margined; eyes hairy or glabrous; antennae long, mostly slender, with 13 segments; scape rarely expanded; annellus distinct; funicle with 7 segments; club in female flattened or incised, often bent outwards; gena rounded, long; clypeus unarmed; mandibles stout, tridentate; thorax elongate; pronotum narrower and lower than mesonotum, with large collar; mesonotum in female depressed, often concave, in front with an elevated triangular space; parapsidal furrows more or less distinct, but not complete; scutellum in front with deep longitudinal furrows; mesopleura bulging, not separated by suture; vein *m* long; *st* and *pm* short; fore femora thin basally, apically curved and slightly expanded; fore metatarsus elongate; middle leg long; femur expanded apically; tibial spur in female stout and long; tarsi with a double row of spines and always expanded; hind tibial spurs usually double, rarely single; abdomen sessile elongate, mostly flat and impressed; the basal tergites often incised in the middle behind; terminal segment strongly elongate; ovipositor shortly exserted.

Males generally resemble Cleonymidae, but are readily separated by the entire mesopleura.

KEY TO GENERA

1.	Hind tibiae and metatarsus expanded, compressed; eyes pubescent	2
	Hind tibiae neither strongly expanded nor compressed	3
2.	Axillae contiguous	*Metapelma* Westwood
	Axillae separate	*Anastatoidea* Gahan
3.	Fore femora strongly swollen; scutellum at base with 2 deep grooves; propodeum at base with 3 grooves	*Mesocomys* Cameron
	Fore femora not strongly swollen, normal	4
4.	Middle metatarsus without stiff spines; mesoscutum not impressed behind	5
	Middle metatarsus with stiff spines or denticles	6

5.	Parapsidal furrows present; axillae confluent	*Charitopus* Förster
	Parapsidal furrows indicated by traces only anteriorly; axillae contiguous	*Neocharitopus* Agarwal
6.	Face carinately deeply excavate, with the front ocellus in the excavation	7
	Face not carinately excavate; scrobe rarely deep, front ocellus outside	8
7.	Middle tibiae not greatly elongate; vein *pm* short, shorter than *st*,	*Eusandalum* Ratzeburg
8.	Hind tibial spur single; maxillary palpi with terminal segment in female greatly enlarged, flattened; first 4 tergites in female and only one tergite in male incised	*Bruchocida* Crawford
	Hind tibial spur double ..	9
9.	Antennae inserted distanctly below level of lower orbital border; eyes hairy; vein *st* long ..	10
10.	Wings rudimentary or absent	11
	Wings normally developed	12
11.	Propodeum posterolaterally not spined; face without a transverse groove; tergites 2-5 incised or not incised	*Eupelmus* Dalman
12.	Scutellar base acute, narrow; axillae contiguous ..	13
	Scutellar base wide, axillae separate	15
13.	Second tergite short, not deeply incised; vein *st* long ..	*Brasema* Cameron
	Second tergite large, incised like tergite 3 and 4	14
14.	Scape short, compressed	*Eupelmus* Dalman
	Scape strongly compressed, vein *pm* very long; *st* long ..	*Cerambycobius* Ashmead
15.	Antennae with 13 segments	*Anastatus* Motschulsky
	Antennae with 10 segments	*Neanastatus* Girault

Metapelma Westwood

1835 *Metapelma,* Westwood, *Proc. zool. Soc. London,* 3 : 69.
1856 *Halidea,* Förster, *Hym. Stud.,* 2 : 31.
1860 *Halidea,* Förster, *Naturh. Ver. Rheinland, Verhandl.,* 17 : 113.
1897 *Halidayella,* Dalla Torre, *Wien. Ent. Z.,* 16 : 85.
1904 *Metapelma,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) ; 288, 290.
1909 *Metapelma,* Schmiedeknecht, *Gen. Ins.,* 97 : 175.
1909 *Metapelma compressipes,* Cameron, *Deutsch. ent. Z.,* 206.
1938 *Metapelma compressipes,* Ferrière, *Ann. Soc. ent. France,* 107 : 30.
1938 *Metapelma,* Mani, *Cat. Indian Ins.,* 23 : 80.
1938 *Metapelma,* Ferrière, *Ann. Soc. ent. France,* 107 : 26-27.
1979 *Metapelma,* Krombein *et al.,* Hymen. N. America, 1 : 180.

Head rounded, without scrobe; eyes hairy; antennae slender, inserted below the level of orbital border; mandibles with 3 obtuse teeth, with 13 segments, scape little enlarged, annellus slightly

elongated, first 2 funicular segments very long, club with 3 segments slightly thickened and obliquely truncate apically; mesonotum very long 2 times as long as pronotum, parapsidal furrows complete, scutellum rounded; axillae confluent; middle legs longer than others; middle femora slightly curved; middle tibial spur long; middle tarsi not expanded, but with cilia; hind leg stout, tibia and metatarsus expanded; propodeum short, without carinae; wings large, vein *m* as long as or a little shorter than *pm, st* about 0.25-0.33 of *m*.

Type-species : Metapelma spectabulis Westwood

Metapelma albisquamulata Enderlein

1912 *Metapelma albisquamulata,* Enderlein, *Ent. Mitt.,* 1 : 147.
1925 *Metapelma speciosa,* Gahan, *Philip. J. Sci.,* 27 : 96.
1938 *Metapelma albisquamulata,* Mani, *Cat. Indian Ins.,* 23 : 80.
1938 *Metapelma albisquamulata,* Ferrière, *Ann. Soc. ent. France,* 107 : 30.

Thorax finely shagreened; annellus a little shorter than pedicel; first funicular segment about 5 times as long as pedicel and a little longer than the second segment; hind tibial length : width ratio 100 : 23.

Type locality : Ceylon : Pankulam

Distribution : Ceylon, Philippines, Thailand

Host : Stemborer larva

Metapelma compressipes Cameron

1909 *Metapelma compressipes,* Cameron, *Deutsch. ent. Z.,* 206.
1938 *Metapelma compressipes,* Ferrière, *Ann. Soc. ent. France,* 107 : 30.

Female : Length 7.00 mm. Body dark green; middle of front mesonotum and underside of scape brassy; lateral lobes of mesonotum, dorsum of abdomen and broad bands on the sides violaceous; apical 0.50 of mesopleurae blue, tinged with violaceous; flagellum black; fore and middle legs rufo-fulvous, coxae green, middle pair fulvous at apex; hind legs black, coxae blue, basal 0.50 of femora white; tinged with fulvous, apex narrowly, base of tibiae more broadly, apex of metatarsus narrowly and whole of other segments white; wings hyaline, with some fuscous streaks.

Head with distinct shallow well separated punctae; face broadly raised in the middle; clypeus transversely grooved; labrum light brown; mandibles black, brown basally, large, broad, bluntly tridentate, inner tooth less distinct than others; eyes large, distinctly converging above; closely hairy; malar space 0.50 of scape; head transverse behind, temples absent above and narrowed below; pronotum large, nearly as long as wide, gradually widened behind; mesonotum finely closely shagreened, apical 0.66 broadly depressed

in the middle; scutellum large, elongate-oval, rounded, widened gradually, but not much towards apex; sides below with a narrow furrow on either side of base stout semi-circular projection, bordered by a transverse furrow behind; metanotum depressed in the middle, apex bordered by a furrow; spiracles large, oval; behind them a longitudinal furrow; abdomen hardly equal to thorax, sessile, gradually narrowed towards apex; back rounded, apices of segments transverse; last dorsal segment projects over the ventral as a broad spine, bluntly rounded at apex; fore and mid legs long, slender, middle much longer than fore; fore tibial spur short; middle spur large, broad, 0.75 of metatarsus; hind tibiae narrowed basally, wider apically, compressed, especially above the tarsi compressed above at base; metatarsus thicker than others and equal to the rest combined; antennae slender, thicker towards apex; last segment obliquely truncate; basal 2 segments of flagellum much shorter than the third, which longer than both combined; head a little wider than thorax.

Type locality : Kuching (Borneo)

Distribution : Kuching (Borneo) : India; Belagoda

Host : Xylotrechus sp.

Metapelma mesandamana Mani & Kaul

1973 *Metapelma mesandamana,* Mani & Kaul, *Mem. School Ent.,* 2 : 62.

Female : Length 5.50 mm. Body bright metallic-green; head metallic-green; eyes, ocelli and antennae dark chocolate-brown; fore and middle legs brown; hind leg chocolate-brown, except for white knee and base of tibia, apical 0.50 of metatarsus and tarsal segments 2-5; wings hyaline with obscure and faint brown infuscation particularly in the anterior apical 0.50 and deeper infuscation in the middle on the posterior margin; veins dark brown; tegula pale brown, scutellum and abdomen chocolate-brown, with some metallic-green reflections; ovipositor dark chocolate-brown.

Head viewed in front nearly as long as wide, almost circular in outline; face with moderately close shallow punctae, space between punctae almost equal to diameter of punctae; eyes converging above, interorbital space above being about 0.50 of below; viewed from above width to length 100 : 44, almost as wide as thorax; vertex width about 0.25 of head width; ocellocular and interocellar spaces equal to ocellar diameter; with scattered fine shallow punctae; eyes conspicuously densely pubescent; viewed from side height to thickness 100 : 63; length of eye to width of eye 100 : 60; gena 0.33 of eye; genal carina distinct; punctation as on frons; antennae inserted almost at level of lower orbital border, segments 13 : 1.1.1.7.3; scape slender basally, distinctly enlarged, compressed beyond the basal 0.50; pedicel a little over 0.33 of scape, annellus

a little shorter than pedicel; first funicular segment equal to 3 times annellus; second a little shorter than first, third equal to fourth and 0.50 of the second, fifth and sixth subequal and each a little shorter than fourth; seventh 0.80 of fifth; club stout, 2 times as long as thick, equal to preceding 2.50 segments combined.

Thorax viewed from above nearly 2.50 times as long as thick; pronotum almost 0.25 of thorax, narrowed and declivous in front; mesonotum about 0.50 of thorax, microscopically shagreened; scutellum 0.25 of thorax, acute at base and nearly 2 times as long as wide; seen from side 2 times as long as high; fore wing length to width 100 : 32, veins *sm* : *m* : *pm* : *st* ratio 180 : 100 : 110 : 25; middle femur slender, tibia 1.20 times femur; metatarsus 0.50 of tibia; tibial spur a little shorter than metatarsus; tarsal segments 2-3 subequal, each 0.33 of metatarsus; segments 5-6 subequal, each a little shorter than third; hind femur about 6 times as long as wide, tibia over 1.20 times femur, expanded dorsally; metatarsus 0.33 of tibia lamellately expanded; tibial spur 0.20 of metatarsus, second tarsal segments 0.33 of metatarsus, with dorsal expansion; third a little shorter than second; fourth and fifth subequal, each 0.66 of the third.

Abdomen 0.40 of body, finely reticulate.

Type locality : Andaman

Metapelma obscurata Westwood

1874 *Metapelma obscurata,* Westwood, *Thesaur. Ent. Oxon.,* 150.
1909 *Metapelma obscurata,* Schmiedeknecht, *Gen. Ins.,* 97 : 175.
1938 *Metapelma obscurata,* Mani, *Cat. Indian Ins.,* 23 : 80.
1938 *Metapelma obscurata,* Ferrière, *Ann. Soc. ent. France,* 107 : 24.

Female : Length 5.70 mm. Body blackish-blue with some green and purple reflections on vertex, mesonotum, propodeum and base of abdomen; abdomen black; antennae and legs black; fore legs with knee, tibiae and tarsi brown, middle legs with great part of tibiae and tarsi brown; knee, tibial spur and basal 0.50 of metatarus yellow; hind legs, with tip of femora and basal tibiae white, tarsus black; wings almost hyaline, very lightly infumated near stigma; head strongly shagreened, with some large punctae; annellus 3 times as long as thick, almost equal to pedicel; first funicular segment 2 times annellus; segments 2-3 a little longer than thick; seventh segment a little thicker than long; middle tibial spur a little shorter than metatarsus; hind tibiae thickness to length ratio 29 : 100; hind metatarsus subequal to the following 4 segments combined; abdomen a little shorter than thorax; ovipositor about 0.50 of abdomen.

Type locality : India

Distribution : India and Thailand

Host : Sugarcane stem-borer larva

Metapelma strychnocola Mani & Kaul

(Fig. 156)

1973 *Metapelma strychnocola,* Mani & Kaul, *Mem. School Ent.,* 2 : 64.

Female : Length 4.00 mm. Body brownish-black, with metallic-blue-green reflection; head almost black, antenna black; fore leg brownish-black; mid leg brownish-black, except brown metatarsus and tibial spur; middle femur at the base white; hind leg brownish-black, except white base of tibia; wings hyaline, veins brown.

Head viewed in front circular, a little wider than long; frons with fine transverse striolations and shallow punctae, space between punctae almost equal to diameter of punctae; eyes converging above; interorbital space below 0.70 of head width, about 3 times at vertex; ocellocular space a little less than ocellar diameter; interocellar space equal to ocellar diameter; eyes pubescent; viewed from side, height to thickness 100 : 65; gena about 0.33 of eye; genal carina distinct; viewed from above 100 : 20, vertex with a few scattered minute punctae; antenna inserted distinctly below lower orbital border; segments 11 : 1.1.1.7.1; scape a little longer than the first funicular segment a maximum width about 5 times the length; pedicel about 0.40 of scape; annellus 0.70 of pedicel; first funicular segment 1.54 pedicel; second equal to the first; third and fourth subequal, each 0.66 of the second; fifth, sixth and seventh subequal, each 0.80 of the fourth but each becoming thicker, seventh obliquely thicker apically; club solid, a little shorter than preceding 3 segments combined.

Thorax viewed from above about 2.20 times as long as wide, pronotum 0.33 of thorax, narrowed in front; mesonotum a little less than 0.50 of thorax, microscopically shagreened; scutellum 0.20 of thorax, declivous; fore wing length to width 100 : 35; veins *sm* : *m* : *pm* : *st* ratio 248 : 100 : 160 : 48; middle femur slender; tibia 0.83 of femur; tibial spur a little shorter than metatarsus; metatarsus 0.50 of tibia, with a row of acute teeth in the middle; second tarsal segment 0.40 of metatarsus; third 0.70 of the second; fourth 0.70 of the third; fifth about 1.30 times the fourth; hind leg femur stout, 0.75 of middle femur and 4.50 times as long as thick; tibia about 1.25 times femur, with a dorsal forked expansion, lamellar tibial length to width 100 : 30, tibial spur about 0.33 of metatarsus; metatarsus 0.40 of tibia, expanded dorsally throughout the length; second tarsal segment about 0.40 of metatarsus, dorsally expanded throughout its length; third segment 0.66 of the second; fourth 0.80 of the third; fifth 1.20 times the fourth.

Abdomen a little less than 0.50 of body; ovipositor about 0.70 of abdomen.

Type locality : Nilambur

Host : Parasitic on an unidentified insect on *Strychnos nux-vomica*

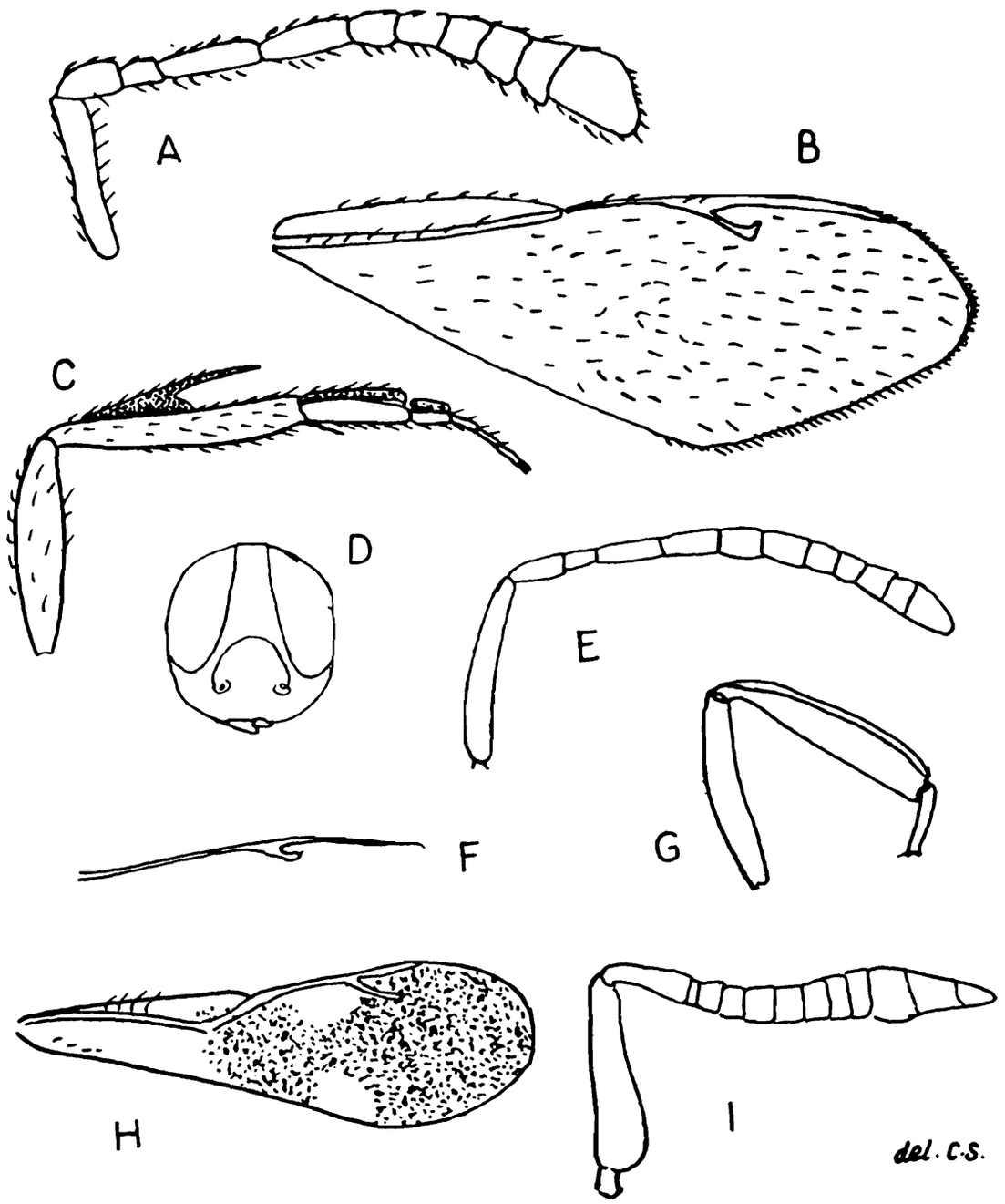

FIG. 156. A-C *Metapelma strychnocola* Mani & Kaul, female : A. Antenna; B. Fore wing; C. Hind leg; D-F. *Anastatoidea indica* Ferrière : D. Head; E. Antenna; F. Stigmal venation; G. *Mesocomys orientalis* Ferrière; H. Fore wing; I. Antenna.

Metapelma taprobanae Westwood

1874 *Metapelma taprobanae,* Westwood, *Thesaur. ent. Oxon.,* 150.
1909 *Metapelma taprobanae,* Schmiedeknecht, *Gen. Ins.,* 97 : 175.
1938 *Metapelma taprobanae,* Mani, *Cat. Indian Ins.,*23 : 80.

"Thorace nigro, aeneo et cupreo variegata; abdomine piceo, basi supra cupreo parum tincto; mesopleuris macula elongato-conica ulba notatis; pedibus 4 anticis rufis, tarsis nigris, articulo primo ad

basin albo; coxis pedum 2 posticorum aeneis, femoribus nigris, basi albis; tibiis in spatulum rotundam clavato-compressis, nigris, basi albis; tarsis posticis albidis, Limidio basali articuli primi articuloque ultimo nigris. Long. corp. lin. 5; oviduct. Lin. 2½; expansalar antic. lin. 6½."

Type locality : Ceylon

Anastatoidea Gahan

1927 *Anastatoidea,* Gahan, *Proc. US nat. Mus.,* 71 (4) : 12.
1938 *Anastatoidea,* Ferrière, *Ann. ent. Soc. France,* 107 : 43.

Female : Head straight behind eyes; eyes large, finely pubescent, converging above; scrobe rounded weakly carinate above; antenna inserted on level of lower orbital border; antennae with 13 segments : 1.1.1.7.3; scape long, pedicel elongate, annellus a little longer than thick; parapsidal furrows strongly converging; scutellum rounded behind, axillae large, distinctly separated in the middle; wings generally infumate; middle legs long, middle tibial spur stout, shorter than metatarsus, which latter provided with spines; hind tibiae enlarged with one white lamellae; hind metatarsus enlarged; abdomen short, subtriangular; ovipositor very long.

Type-species : Anastatoidea brachartonae Gahan

Anastatoidea brachartonae Gahan

1927 *Anastatoidea brachartonae,* Gahan, *Proc. US nat. Mus.,* 71 (4) : 13.
1938 *Anastatoidea brachartonae,* Ferrière, *Ann. ent. Soc. France,* 107 : 48.

Type locality : Java

Distribution : Java, Malaysia, Ceylon

Host : Tachanid parasite of *Artona catoxantha,* pupa of *Ptychomyia remota,* pupa of *Psyche vitrea.*

Anastatoidea indica Férrière

(Fig. 156)

1938 *Anastatoidea indica,* Férrière, *Ann. ent. Soc. France,* 107 : 49.

Female : Length 5.00 mm. Body shiny black, with some purple reflections on face and vertex; eyes bordered green; thorax black-green; anterior border of mesonotum, scutellum and axillae as well as mesopleura red abdomen black; first tergite red; antennae black with metallic reflections, scape yellowish-orange, legs brown, fore and middle coxae and fore femur and tibia and middle tibia reddish, middle and hind tarsus white, hind tibial lamellae white; ovipositor sheath black, with a white ring.

Head transverse, slightly enlarged behind eyes; scrobe wider than long; scape long, slender but not reaching front ocellus; pedicel 3 times as long as thick; annellus 2 times as long as thick; first funicular segment a little longer than pedicel, following funicular segment a little longer than pedicel, following funicular segment becoming gradually shorter; club equal to preceding 2 segments combined; middle lobe of mesonotum finely punctately shagreened; parapsidal furrows confluent a little before tip of mesonotum; scutellum highly convex; fore wing slightly infumate at base upto vein *pm*, with a transverse hyaline hairless band behind vein *st*, vein *m* as long as *sm*, *st* about 0.25 of *m*, about 2 times *st*; middle tibial spur 0.66 of metatarsus; abdomen equal to thorax, 1.30 times as long as wide, spatulate; first tergite smooth, last 2 tergites shagreened; ovipositor straight, about 0.60 of body.

Type locality Lyallpur (Pakistan)

Host : lac-insect

Mesocomys Cameron

1905 *Mesocomys,* Cameron, *Trans. S. Africa Philos. Soc.,* 15 : 210.
1909 *Mesocomys,* Schmiedeknecht, *Gen. Ins.,* 97 : 175.
1952 *Mesocomys,* Risbec, *Mem. Inst. Sci. Madagascar,* (E) 2 : 73.

Head narrowed behind; occiput rounded; antennae inserted close to mouth, thickened apically, with 13 segments; funicle sparsely hairy; second segment 4 times as long as thick; eyes large, ovate, far removed from mandible base; frons slightly excavate in the middle; clypeus in the middle with a longitudinal furrow; parapsidal furrows short, but distinct; scutellum large, longer than wide, basally with 2 large, deep grooves; propodeum basally with 3 grooves, of which the middle largest; vein *sm* long, thickened in the apical 0.33; vine *m* short; *st* stout; knob forked; fore femora strongly expanded in the middle; middle metatarsus strongly swollen; middle tibia excavate behind, with stout spur; tergites not incised; ovipositor short.

Type-species : Mesocomys pulchriceps Cameron

Mesocomys orientalis Férriere

(Fig. 156)

1935 *Mesocomys orientalis,* Férrière, *Stylops,* 4 : 150.
1938 *Mesocomys orientalis,* Mani, *Cat. Indian Ins.,* 23 : 149.

Female : Length 2.40-2.70 mm. Body black with cupreous reflections on frons, vertex and thorax; face, cheeks and temples green; pronotum aeneous-green; mesopleurae aeneous-blue; abdomen aeneous, brown basally; scape yellow, with a green spot

at base below, pedicel black with metallic reflections, flagellum brown, club darker than funicle; legs brown with metallic reflections; fore and middle tibiae and tarsi more yellow; hind tibiae and tarsi black; wings infuscated in the middle, hyaline base and tip, 2 rounded sports opposite each other behind vein *m*.

Head transverse, narrowed behind eyes; eyes oval, converging very little above; fronto-vertex broad, smooth and shining, vertex very finely transversely striate; interocellar space 2 times ocellocular space; face shagreened, sides of scrobe acutely margined, converging above, gena finely striate; antennae inserted a little above mouth; scape as long as scrobe; pedicel triangular, 2 times longer than thick; annellus small, transverse; funicular segments short and transverse, thicker from the first to the seventh, which is about 3 times as thick as long; club with 3 segments, pointed at tip, as long as preceding 5 segments combined.

Pronotum broad, rectangular, margined in front, where it bears a few long erect hairs; mesonotum very finely shagreened, almost smooth; parapsidal furrows strong and deep, parallel at first, then converging rapidly to a transverse furrow before the end of mesonotum; sides and end of mesonotum slightly elevated and margined; scutellum finely striate, with 2 strong triangular depressions at base; propodeum very short; mesopleurae very finely striate, almost smooth, apically anteriorly; wings reaching beyond tip of abdomen; vein *sm* slightly curved down then up at end; vein *m* relatively short, not much longer than *pm*; vein *st* long, curved, a little shorter than *pm*; discal cilia black, thickened and scale-like in the middle, specially before the hyaline spots, thinner and sparser towards the tip of wing; legs as in *Anastatus;* fore and hind femora slightly swollen; middle tibial spur strong but a little shorter than metatarsus; this and next tarsal segment with small black spines below; hind elongate, subequal to tibiae, metatarsus equal to following 4 segments combined; abdomen narrower than thorax, broadest in the middle; ovipositor not protruding.

Male : Length 2.00-2.40 mm. Head and thorax green, abdomen aeneous; antennae yellow; legs entirely yellow, only the hind coxae and some slight reflections on the hind femora greenish.

Head as in female; fronto-vertex very finely transversely striate; pedicel long, almost 3 times as long as thick; funicular segments short and transverse, club solid, equal to the preceding 3 segments combined.

Mesonotum strongly shagreened; parapsidal furrows narrow and fine; scutellum convex, without depression at base; wings more slightly infuscate in the middle, hyaline spots less conspicuous; hind legs stronger than middle legs.

Abdomen depressed, triangular, a little narrower and not longer than thorax.

Type locality : Rangoon (Burma)

Eusandalum Ratzeburg

1836 *Stenocera,* Curtis, *Brit. ent.,* 13 : 596 (preoccupied)
1852 *Eusandalum,* Ratzeburg, *Rechnum, Forstins,* 3 : 199.
1856 *Polymoria,* Förster, *Hym. Stud.,* 2 : 31.
1856 *Ratzeburgia,* Förster, *Hym. Stud.,* 2 : 31.
1862 *Blach,* Walker, *Trans. ent. Soc. London,* 1 : 399.
1904 *Eusandalum,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 288, 290.
1909 *Eusandalum,* Schmiedeknecht, *Gen. Ins.,* 97 : 176.
1915 *Meseusandalum,* Girault, *Mem. Queensland Mus.,* 4 : 34.
1941 *Polymorioides,* Masi, *Ann. Mus. civ. Stor. nat. Genova,* 61 : 154.
1967 *Eusandalum,* Boucek, *Acta ent. bohemoslov.,* 61 : 154.

Vertex wide and flat or slightly concave, shortly margined near eyes; almost eyes bare; front ocellus within scrobe; antennae inserted on lower orbital border, with 11 segments : 1.1.1.7.1; mandible tridentate; mesonotum and scutellum flat, parapsidal furrows weak and incomplete; axillae separate, vein *m* shorter than *sm;* veins *st* and *pm* short; legs slender; fore femur not swollen, middle tibiae not very elongate, middle metatarsus with scattered setae; abdomen elongate; ovipositor emerging from a ventral keel; mesopleura sculptured.

Type-species : Eusandalum tridens Ratzeburg

Eusandalum gardneri (Mani & Kaul)

(Fig. 157)

1973 *Macromesus gardneri,* Mani & Kaul, *Mem. School Ent.,* 2 : 55.
1978 *Eusandalum gardneri,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 461.

Female : Length 7.00 mm. Body largely metallic, with blue and violet reflections, except for the blackish-brown femora and the brown tarsi; wings hyaline, veins brown; abdomen brownish-black.

Head viewed in front width to height ratio 100 : 75; frons closely, reticulately punctate, with a coarse transverse rugose, raised carinate process, contiguous with the upper 0.50 of the inner orbital borders; head viewed from above about 2.50 times as wide as long; ocellocular space less than ocellar diameter; interocellar space subequal to 3 ocellar diameters; front ocellar space about 2 times ocellar diameter; front ocellus lies within scrobe; vertex closely reticulate; head viewed from side height to thickness about 100 : 62; gena about 0.60 of eye; finely reticulate; antenna inserted distinctly below the lower orbital border; segments 11 : 1.1.1.7.1; scape long, slender, nearly 10 times as long as thick; pedicel about 0.20 of scape; annellus short, only 0.25 of pedicel; funicular segments 1-2 subequal, each about 4 times pedicel; segments 3-4 subequal, a little shorter than second segment; fifth segment about 0.60 of fourth; sixth segment about 0.83 of the fifth; seventh segment about 0.60 of the sixth; terminal club segment a little shorter than the last funicular segment.

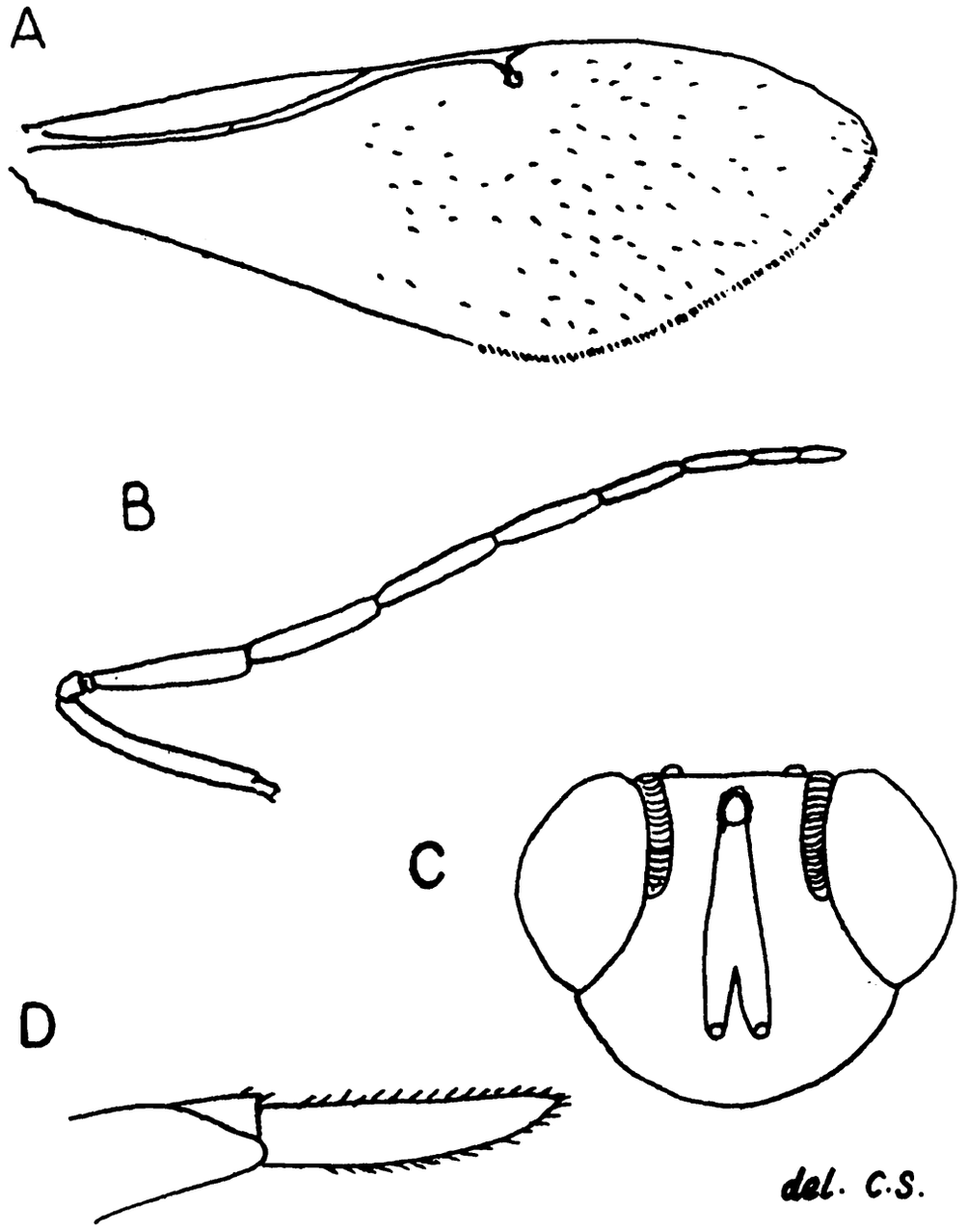

FIG. 157. *Eusandalum gardneri* (Mani & Kaul) female : A. Fore wing; B. Antenna; C. Head; D. Abdomen tip.

Thorax closely finely reticulate; pronotum, scutum and scutellum ratio 1 : 7 : 2; pronotum very narrow, about 5 times as wide as long; scutum distinctly wider than long; scutellum about 1.50 times as long as wide; fore wing length to width 100 : 36; hyaline, with a faint infuscation in the middle; veins *sm* : *m* : *pm* : *st* ratio 240 : 100 : 25 : 25; hind wing about 0.60 of fore wing; fore femur compressed, about 4 times as long as thick; tibia about 0.83 of femur; tarsus a little over tibia; metatarsus about 0.33 of tibia, second tarsal

segment about 0.70 of the first; tarsal segments 3-4 subequal, and each about 0.50 of metatarsus and about 0.70 of the second tarsal segment; fifth tarsal segment about 1.20 times the fourth; middle femur equal to fore femur, but much more slender; tibia about 1.30 times the femur; tarsus about 0.50 of tibia; tibial spur equal to metatarsus, stout; metatarsus about 0.25 of tibia; tarsal segments 2-5 subequal, each about 0.80 of metatarsus; hind femur and tibia somewhat compressed; femur distinctly longer than middle femur; tibia equal to femur; tarsus about 1.20 times tibia; tibial spur about 0.33 of metatarsus; metatarsus about 0.40 of tibia; second tarsal segment about 0.50 of metatarsus; third tarsal segment about 0.80 of second segment; fourth segment about 0.75 of third; fifth segment about 0.80 of the fourth.

Abdomen dorsally and at the sides transversely reticulate except first 2 tergites; length of abdomen about 0.60 of body; ovipositor slightly exserted.

Type locality : Dehra Dun : R. Asan

Host : Parasitic on an unidentified insect on *Acacia gangeana*

Bruchocida Crawford

1913 *Bruchocida,* Crawford, *Proc. US nat. Mus.,* 45 : 245.
1938 *Bruchocida,* Mani, *Cat. Indian Ins.,* 23 : 83.

Antennae with 13 segments 1.1.1.7.3; mandibles tridentate; maxillary palpi in female with the terminal segment greatly enlarged and flattened but in male slightly; eyes with fine short hairs; fore wings in female with vein *m* about 0.50 of *sm* and about 2 times *st* and equal to *pm;* in male *pm* slightly longer than *st;* hind tibial spur single; pubescence in female flattened and scale-like; in male hair-like; axillae not widely separated; ocellocular space slightly more than ocellar diameter; first 4 tergites in female incised in the middle; only the first tergite in male incised; ovipositor exserted.

Type-species : Bruchocida vuilleti Crawford

Bruchocida orientalis Crawford

1913 *Bruchocida orientalis,* Crawford, *Proc. US nat. Mus.,* 45 : 247.
1938 *Bruchocida orientalis,* Mani, *Cat. Indian Ins.,* 23 : 83.
1940 *Bruchocida orientalis,* Pruthi & Mani, *ICAR. Misc. Bull.,* 30 : 12.

Female : Length 4.00 mm. Body bronzy colour with metallic-green reflections; scape reddish; pedicel green; rest of antenna dark brown; first funicular segment about 1.50 times pedicel; other remaining funicular segments gradually becoming shorter; seventh funicular segment a little longer than thick; thorax umbilicately punctate, partly coarsely reticulate; fore wing with white hairs as

far tip of vein *sm*, beyond which with black hairs; wing somewhat infuscated; fore and hind coxae bronzy; fore and middle legs and middle coxae reddish; hind legs dark bronzy colour; tibia white; ovipositor about 0.25 of body.

Type locality : Bangalore

Distribution : Bangalore

Host : Bruchus chinensis

Eupelmus Dalman

1820 *Eupelmus,* Dalman, *Svensk. Vet.- Akad. Handl.,* 41 : 377 (136, 180).
1837 *Macroneura,* Walker, *Ent. May.,* 4 : 353.
1896 *Cerambycobius,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 7, 10, 17.
1904 *Eupelmus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 289.
1909 *Eupelmus,* Schmiedeknecht, *Gen. Ins.,* 97 : 179.
1938 *Eupelmus,* Mani, *Cat. Indian Ins.,* 23 : 81.
1979 *Eupelmus,* Krombein *et al., Hymen. N. America,* 1 : 880.

Head front subtriangular; scrobes broad, not deep; antennae inserted a little below the middle of face and widely separated from each other; in female weakly thickened apically; club flattened and curved outwards; eyes rounded, glabrous; vertex broad; genal carina distinct; thorax long, flat; parapsidal furrows in female weak, in male distinct; scutellum large; propodeum short, almost smooth, in male with distinct longitudinal carina; wings in female often absent, in male present; middle tarsus in female expanded, with a double row of bristles, in male simple; hind tibial spur double or single; abdomen sometimes compressed, but most often flattened and impressed; second tergite incised, the 3 following tergites margined; ovipositor short.

Type-species : Eupelmus memnonius Dalman

Eupelmus amorphococci Ashmead

1925 *Eupelmus amorphococci,* Ashmead, (Original description could not be traced).
1925 *Eupelmus amorphococci,* Ramakrishna Ayyar, *Spol. Zeyl.,* 13 : 247.
1938 *Eupelmus amorphococci,* Mani, *Cat. Indian Ins.,* 23 : 82.
1940 *Eupelmus amorphococci,* Mani, *Misc. Bull.,* 30 : 11.

Type locality : Ceylon

Distribution : Ceylon

Host : Amorphococcus mesuae

Eupelmus amphitus Walker

1846 *Eupelmus amphitus,* Walker, *Ann. Mag. Nat. Hist.,* 17 : 114.
1909 *Eupelmus amphitus,* Schmiedeknecht, *Gen. Ins.,* 97 : 179.
1938 *Eupelmus amphitus,* Mani, *Cat. Indian Ins.,* 23 : 82.

"Viridis, micans, antennis nigris, oviductu pedibasque flavis, profemoribus fusco vittatis, alis limpidis (corp. long. lin. 2¼; alar lin. 4.)

Bright golden-green; head thorax minutely squamous, pubescent; front of the head bluish-green; eyes and ocelli red; antennae black, slender, subclavate, as long as the thorax; thorax, fusiform; abdomen fusiform, a little longer than the thorax; oviduct yellow, hardly equal to 0.16 of the length of the abdomen; legs yellow; a short fuscous stripe on the outside of each of the profemora; mesotibiae armed with long spines; mesotarsi dilated; wings limpid; nervures yellow; humerus rather more than 0.33 of the length of the wing; ulna rather shorter than the humerus; radius about 0.33 of the length of the wing; ulna rather shorter than the humerus; radius about 0.33 of the length of the ulna; cubitus a little shorter than the radius; stigma small."

Type locality : India, Bombay

Eupelmus carinatus Kieffer

1905 *Eupelmus carinatus,* Kieffer, *Ann. Soc. Sci. Bruxelles,* 29 : 194.
1938 *Eupelmus carinatus,* Mani, *Cat. Indian Ins.,* 23 : 82.

Female : "Differe de l'espece precedente par les caracters suivants; 1'proeminence longitudinale entre les antennes conformee encarene, 1'ocelle anterieur demeurant eloigne de la partie excavee de la face; 2 pronotum presque aussi long que la partie convexe et subtriangulaire du mesonotum; 3 antennes a scape non cylindrique mais rentle au milleu ou il est plus gros que la partie apicale de 1'antenne, un peu plus long que les trois articles suivants; les dix autres articles a peu pres egalement gros, et assez longuement velus, les derniers a peine plus gros; annelet glabre comme d'ordinaire, mais a peu pres aussi gros que 1'article precedent, aussi long que gros; article 4 plus de deux fois aussi long que gros, le onzieme plus de deux fois aussi long que le dixieme, les autres a peine de moitie plus longs que gros; 4 la coloration est differente de celle de 1'espece precedente; partie excavee de la face d'un bleu d'azur, joues, bouches et tempes dorees, vertex, occiput et pronolum d'un noir bleuatre; mesothorax et meththorax verts, bords lateraux du mesonotum a reflet plus ou moins rouge; la partie convexe et le scutellum d'un vert dore; scape et article suivant, hanches anterieures et base des posterieures veris; les autres articles antennaires noirs; pattes testaces, avec un trait noiratre sur le dessus des femurs et des tibias anterieurs; tariere a tiers median, jaune, le reste noir; 5 pattes intermediaires pas sensiblement plus longues que les posterieures, leurs spinules toujours jaunes; 6 lariere aussi longue que le dernier arceau ventral. Taille : 5 millim.

Male Antennes filiformes, pas sensiblement epaissies an bout, scape renfle fortement; article 4 deux fois e demie aussi long que gros, les suivants diminuant graduellement, le dixieme encore deux

fois aussi long que gros, le onzieme atteint deux fois et demie la longueur du dixieme. Corps d'un vert metallique; antennes, extremite des tibias intermediaire avec les deux premiers articles des tarses intermediaires noirs; pattes et moitie basale de l'abdomen rouges, cell-ci retrecie en un large petiole, la moitie apicale ovoidale et d'un noir bleuaire comme les hanches. Taille; 3 a 4 millim.

Moeurs. Obtenu des rentlements des tiges d'Artemisia qui ont ete decrits plus haut; parasite de la larve la Cecidomyie."

Type locality : Bengal

Host : larvae of gallmidge on *Artemisia*

Eupelmus leithi Walker

1872 *Eupelmus leithi,* Walker, *Notes Chalc.*, 5 : 83.
1909 *Eupelmus leithi,* Schmiedeknecht, *Gen. Ins.*, 97 : 181.
1938 *Eupelmus leithi,* Mani, *Cat. Indian Ins.*, 23 : 82.

Type locality : India

Eupelmus popa Girault

1917 *Eupelmus popa,* Girault, *Descr. Hymen. Chalc. Var. Cum. Observ.*, 5 : 4 (private)
1922 *Eupelmus popa,* Gahan, *Proc. US nat. Mus.*, 61 (24) : 14.

Female : Length 2.00 mm. Body metallic-green; tip of pedicel, annellus, legs except coxae, pale yellow, rest of antennae black, scape metallic-green; middle femora apically with a small yellow spot; middle tibiae narrowly dark brown at base.

Head and thorax weakly reticulate; head not wider than thorax; scrobe deep; eyes glabrous; ocellocular space equal to cellar diameter; antennae inserted below middle of face, with 13 segments, clavate, scape short, slightly compressed; pedicel more than 2 times as long as thick; annellus about 0.50 times as long as thick; funicle with 7 segments; first segment subquadrate, second segment distinctly longer than thick; third longest, 1.50 times as long as thick; fourth subequal to third but thicker, fifth and sixth subquadrate; seventh slightly thicker than long, club with 3 segments ovate, subequal to preceding 3 segments combined; parapsidal furrows deep in front; vein *sm* equal to *m* and *pm* combined, *st* a little shorter than *pm*; abdomen a little longer than thorax; weakly sculptured; ovipositor about 0.80 of abdomen.

Male : Length 1.00-2.00 mm. Abdomen shorter than thorax, body metallic-green; scape at base and below tip of pedicel, legs except coxae pale yellow; middle femora and tibiae without brown spots.

Type locality : Dutch Antilles : Cura Cao

Distribution : Cuba, U.S.A. India : Chamarajanagar Nanjangula

Host : Cecidomyiid *Contarinia caudata* Felt.

Eupelmus tachardiae (Howard)

1896 *Anastatus tachardiae,* Howard, *Proc. US nat. Mus.,* 18 : 641.
1909 *Anastatus tachrdiae,* Schmiedeknecht, *Gen. Ins.,* 97 : 188.
1913 *Brasema annulicaudis,* Cameron, *Indian forest Rec.,* 4 (2) : 8.
1935 *Eupelmus tachardiae,* Mahdihassan, *Curr. Sci.,* 3 : 562-564.
1935 *Eupelmus tachardiae,* Glover & others, *Curr. Sci.,* 4 : 37-39.
1935 *Eupelmus tachardiae,* Férrière, *Bull. ent. Res.,* 26 : 394.
1938 *Eupelmus tachardiae,* Mani, *Cat. Indian Ins.,* 23 : 82.
1940 *Eupelmus tachardiae,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 12.

Female : Length 2.50-3.30 mm. Body black with green and brassy reflections, more or less purple, especially on face, vertex and scutellum; abdomen violaceous with base green; antennae black, scape yellow, green reflections on the pedicel and sometimes also the first funicular segment; legs reddish-yellow, coxae black with metallic reflections; fore and hind femora brownish-black except at tip; fore tibiae brown in the middle above; hind tibiae more or less brown in the middle; valve narrowly black at base, dark brown at tip, with a broad yellow ring in the middle.

Head finely shagreened, weakly transversely striate behind ocelli; occipital margin scrobe deep, punctate, top finely striate; front ocellus as far from the antennal furrow as from the antennal furrow is from the margin of eyes; interocellar space equal to ocellocular space; antennae inserted a little below lower level of orbital border; scape cylindrical, not reaching front ocellus; pedicel elongate, 2 times as long as thick; annellus small, transverse; first funicular segment equal to pedicel, following segments gradually shorter and broader, segment sixth subquadrate, seventh a little thicker than long; club equal to preceding 3 segments combined.

Thorax finely shagreened, dull, scutellum slightly striate; parapsidal furrows meet in the middle of mesonotum and are continued behind by a weak central furrow; axillae distinctly separated; propodeon very short, transverse; wings large, reaching beyond the tip of abdomen; vein *m* a little longer than *sm;* vein *st* 0.25 of *m; pm* equal to *st;* fore femora not much thickened, tibia shorter than the femora; middle tibial spur equal to metatarsus, which is thick and short and with black spines below.

Abdomen equal to or a little shorter than thorax, finely shagreened above, rounded behind; ovipositor 0.40 of abdomen.

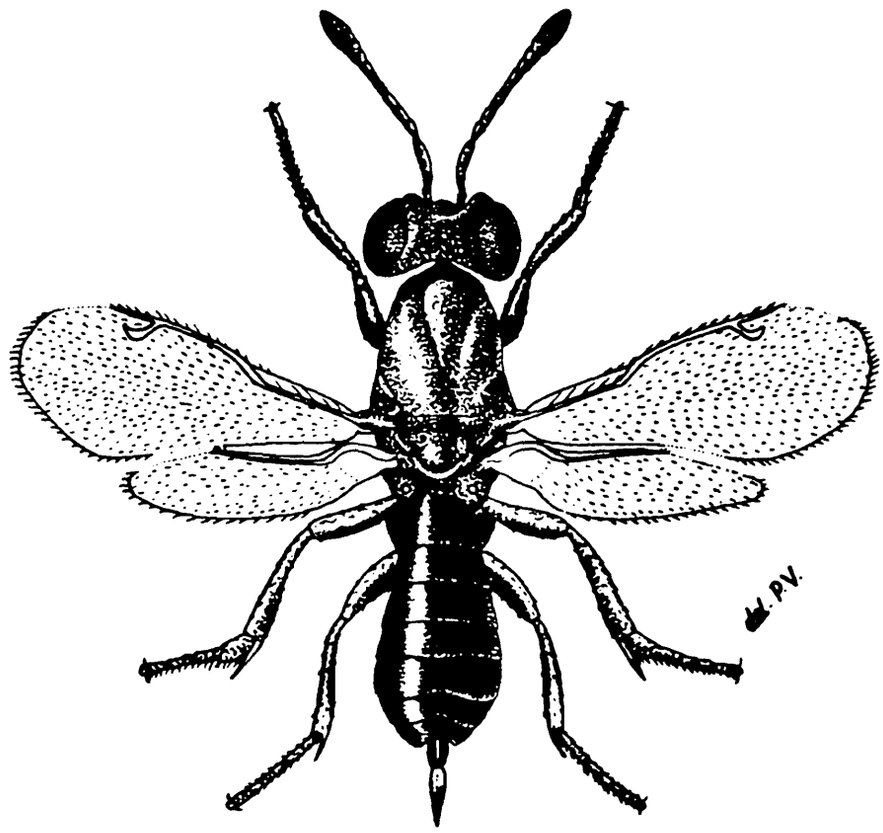

FIG. 158. *Eupelmus tachardiae* (Howard), male.

Male : Length 1.30-2.30 mm. Body black with greenish reflections; antennae entirely black; scape and pedicel green; legs black, only the fore tibiae below and at tip, middle and hind tibiae at tip, and the tarsi at base, yellow.

Scape thickened in the middle; pedicel a little longer than thick; funicular segments subequal and a little longer than preceding 2 segments combined; parapsidal furrows complete; scutellum almost as long as mesonotum; propodeum short; vein *m* about 4 times as long as *st*; abdomen shorter and narrower than thorax, slightly thickened behind, triangular.

Type locality : Punduloya, Ceylon

Distribution : Ceylon, India

Host : Tacharaia lacca, Kerr.

Eupelmus tenuicornis Kieffer

1905 *Eupelmus tenuicornis,* Kieffer, *Ann. Soc. Sci. Bruxelles,* 29 (2) : 194.

1938 *Eupelmus tenuicornis,* Mani, *Cat. Indian Ins.,* 23 : 82.

1940 *Eupelmus tenuicornis,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 11.

Female : "Taille : 3 a h million. Scape et pattes d'un rouge tres pale; antennes d'un bleu metallique; hanches d'un noir bleu metallique ou cuivre, les posterieures d'un vert dore, le reste du thorax, le front et la face d'un bleu ou vert metallique; abdomen cuivre; les deux tiers inferieurs des femurs posterieurs, les trochanters et femurs anterieurs en entier avec le bord externe des tibias anterieurs brun noir. Joues traversees par un sillon. Mandibules larges et le troisieme sont de moitie plus longs que gros, le deuxieme deux fois et demie et le quatreme de quatre a cinq fois. Palpes labiaux de trois articles, dont les deux premiers sont a peine plus longs que gros, le troisieme deux fois et demie. Entre Pinsertion des antennes se voit une proeminence longitudinale et convex, non comprimee comme chez l'espece suivante; entre l'insertion des antennes et les yeux se voit de meme, de chaque cote, une proeminence longitudinale s'evanouissant insensiblement veres le haut et bordant la partie excavee de la face. Ocelle anterieur assez eloigne de la partie excavee; les deux posterieurs plus rapproches des yeux que l'un de l'autre, mais plus eloignes du bord postrieur de la tete. Antennes de 11 articles; scape cylindrique, comnie les autres articles, moins gros que la moitie apicale de l'antenne, aussi long que les 4 articles suivants; le deuxieme article plus eroit que le scape, aussi long que le quatrieme qui est trois fois aussi long que gros; le troisieme ou anneau pas plus long que gros; le cinquieme et le sixieme un peu moins long que le quatrieme, mais un peu plus gros; les quatre suivants grossissant graduellement, aussi longs que gros, le derinier est le plus long et le plus gros, deux fois aussi long que gros, aminci an bout, et parait compose de 2 articles soudes; pilosite tres courle. Pronotum tres court, a peine visible de dessus; mesonotum plus ou moins enfonce en arriere, apres la mort de l'insecte, pattes intermediaires distinctement plus longues que le posterieures et bearcoub plus longues que les anterieures; spinules de l'extremite de leur tibia, de la partie elargie de leur metatarse et du dessous des quatre autres articles tantot noirs, tantot jaunatres; crochets des tarses bifides, beaucoup plus courts que la palette. Ailes anterieures atteignant l'extremite de l'abdomen, velues et cilees; nervure stigmaticale s'arretant vis-a-vis de l'extremite de la sous-costale, atteignant le dernier tiers alaire. Ailes posterieures a trois crohets frenaux. Abdomen excave sur le dessus; l'avant-dernier arceau ventral avec une petite spinule deux fois aussi longue que large, sur le milieu de son bord posterieur, le dernier arceau arssi long que les deux derniers arceaux dorsaux, traverse par un profond sillon longitudinal, plus long que l'oviducte; celui-ci egalant le tiers de l'abdomen, jaune, avec l'extreme base et le tiers apical d'un brun noir. Corps finement chagrine.

Male : Taille : 2, 5a 3, 5 millim. Differe per les caracteres suivants : Pates d'un noir bluatre tibias anterieurs et intermediaires rougeatres sur le dessous, articles 1 et 2 des tarses posterieurs blancs, les autres bruns; abdomen noir bleuatre, rouge dans son tiers basal

qui est retreci en un large petiole; antennes a scape beaucoup plus gros et plus court, de 11 articles, y compris l'annelet, sixieme article presque deux fois aussi long que gros, les autres au maximum de moitie plus longs que gros, le dernier deux fois aussi long que l'avant-dernier; mesonotum non enfonce; pattes intermediaires conformees comme les posterieures, sauf leur long eperon.

Moeurs. Obtenu des galles de *Lasioptera textor* en juin et en decembre."

Type locality : Bengal

Distribution : Bengal

Host : Lasioptera textor

Eupelmus terminaliae Hafiz

1938 *Eupelmus terminaliae,* Hafiz, *Rec. Indian Mus.,* 40 (1) : 121.

Female : Length 2.75-3.00 mm. Body dark metallic-green; head slightly wider than thorax, metallic-green, finely sculptured; ocellar triangle equilateral; ocellocular space less than ocellar diameter; frons shagreened; eyes pubescent; antennae inserted below the level of lower orbital border; scape about 0.50 of rest of antennae; thorax 2 times as long as wide; veins *sm* and *m* subequal, *pm* equal to *st*; middle tibial spur equal to metatarsus; abdomen about 0.50 of thorax, ovipositor not exserted.

Male : Length 0.25 mm. Body metallic-brown, fore femora dark brown; fore tibiae and tarsus light brown, except the dark brown femur, middle legs dirty-white; hind femur dark brown; hind tarsus dirty-white; abdomen black; head slightly wider than thorax, minutely punctate, ocellocular space less than ocellar diameter; scape about 0.25 of flagellum; abdomen about 0.75 of thorax.

Type locality : Calcutta

Host : Eggs of Lasiocampid moth on *Terminalia* sp.

Eupelmus testaceiventris (Motschulsky)

1863 *Roptrocerus testaceiventris,* Motschulsky, *Bull. Soc. Imp. Nat. Monsou,* 36 : 49.
1909 *Roptrocerus testaceiventris,* Schmiedeknecht, *Gen. Ins.,* 97 : 360.
1938 *Roptrocerus testaceiventris,* Mani, *Cat. Indian Ins.,* 23 : 104.
1965 *Eupelmus testaceiventris,* Boucek, *Acta Ent. Mus. Natl. Pragae,* 36 : 554.
1978 *Eupelmus testaceiventris,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 461.

Length 4.38 mm. "Elongatus, angustatus, nitidus, viridi-aeneus, abdomine subcupreo-marginato, pedibusque dilute-testaceis, antennis nigris, dimidio corporis longitudine, subclavatis, 9 articulatis, articulis mediis subaequalibus, ultimo duplo majori, ovato,

subacuminato; capite subrotundato, depresso, oculis convexis, fuscis; thorace capite vix angustiore, elongato-subovato, subtilissime punctulato, subaureo-metallico, pronoto antice attenuato, subconvexo, utrinque subparallelo-impresso, segmentis posticis transversis, angustissimis, mesonoto arcuato-triangulare, medio in tuberculo subovato elevato, metanoto vix exserto, rotundato attenuato; petiolo indistincto; abdomine thoracis latitudine et longitudine, elongato-subovato, postice attenuato, apice oviducto 0.25 corporis longitudine instructo, supra depresso, submetallico iridescens, subtus compresso, dilatato, longitudinaliter carinato, apice oblique truncato."

Type locality : Ceylon : Mt. Nuwara Ellia

Anastatus Motschulsky

1860 *Anastatus,* Motschulsky, *Etud. Ent.,* 8 : 116.
1869 *Antigaster,* Walsh & Riley *Amer. Ent.,* 1 : 156.
1883 *Solindenia,* Cameron, *Trans. Roy. ent. Soc. London,* 189.
1904 *Anastatus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 290.
1909 *Anastatus,* Schmiedeknecht, *Gen. Ins.,* 97 : 188.
1911 *Paraguaya,* Girault, *Zool. Jahrb. (System.)* 31 : 385.
1913 *Ooderelloides,* Girault, *Trans. Roy. Soc. S. Austral.,* 37 : 6, 9, 10.
1922 *Pseudooderella,* Brethes, *Soc. Cient. Argentina, An.,* 93 : 127.
1938 *Anastatus,* Mani, *Cat. Indian Ins.,* 23 : 84.
1952 *Anastatus,* Risbec, *Mem. Inst. Sci. Madagascar,* (E) 2 : 104.
1960 *Anastatus,* de Santis, *Rev. Fac. Agron. La Plata,* (3) 36 : 111.
1967 *Anastatus,* Burks, *Amer. ent. Soc. Trans.,* 93 : 423-431.
1979 *Anastatus,* Krombein *et al.,* Hymen. N. America, 1 : 886.

Eyes oval, finely hairy, without a carina between eye and antennal socket; antennae inserted on level of lower orbital border, rarely a little below or above, with 13 segments; genal carina distinct; scutellar base broad; vein *pm* long, almost 2 times as long as *st;* abdomen short, flat, widened behind, most usually smooth, very rarely punctate; scape in male short; pedicel very minute; funicle filiform, densely hairy, club thicker.

Type-species : Anastatus mantoidae Motschulsky.

Key to Subgenera

1. Antennae in male not branched; fore femora not expanded; wing usually with speculum	*Anastatus (Anastatus)* Motsc.
Antennae in made branched; fore femora distinctly expanded; speculum absent	*Anastatus (Cladanastatus)* Boucek

Key to Species

1. Female with a hyaline band across fore wing	2
Female with fore wings hyaline or with hyaline patches.	6

2. Hyaline band curved or angulated	3
Hyaline band straight	*Anastatus bangalorensis* Mani & Kurian
3. Pedicel nearly equal or slightly longer than first funicular segment	4
Pedicel shorter than the first funicular segment	5
4. Hyaline band slightly curved; nearly as wide as the length of vein *st;* abdomen bluish-green	*Anastatus dentatus* Narayanan *et al.*
Hyaline band slightly curved; nearly 3 times broader than the length of vein *st;* abdomen brown	*Anastatus kashmirensis* Mathur
5. Hyaline band of fore wing strongly angulated, abdomen black	*Anastatus tenuipes* Bol. & Pielt.
Hyaline band of fore wing slightly angulated; abdomen brown	*Anastatus colemani* Crawford
6. Fore wing hyaline	*Anastatus vermai* Bhatnagar
Fore wing with hyaline patches or infuscate	7
7. Fore wing with hyaline patches	8
Fore wing infuscate apically	*Anastatus umae* Boucek
8. Fore wing with 3 hyaline patches; pedicel longer than first funicle; abdomen dark brown	*Anastatus amara* (Subba Rao)
Fore wing with 3 hyaline patches; pedicel shorter than first funicle; abdomen mostly black	*Anastatus acherontiae* Narayanan *et al.*

Anastatus bangalorensis Mani & Kurian

1953 *Anastatus bangalorensis,* Mani & Kurian, *Indian J. Ent.,* 15 : 13.

Female : Length 2.60 mm. Body dark iridescent green with some blue and red lusture in certain angles; mandibles reddish-brown to black; scape rufescent; pedicel darker; rest of antennae dark brown to black; legs reddish-brown; wings spotted.

Head viewed from above transverse, as wide as thorax, a little less than 2 times as wide as long; ocellocular space about 0.33 of ocellar diameter; interocellar space 5 times ocellocular and slightly less than 2 times front ocellar space; vertex sinuately margined behind, finely punctate to transversely striate, sparsely pubescent; head viewed from front nearly circular; orbital borders converging above; antennae inserted below on level of lower orbital borders; scrobes reaching to nearly front ocellus; face rugosopunctate, densely pubescent; clypeus crenulate below; head viewed from side nearly 1.05 times as long as thick; temples narrow, about 0.33 of height of head; mandibles short, stout; antennae with 13 segments : 1.1.1.7.3; scape about 0.50 of antennae, somewhat curved, thicker apically than basally; pedicel about 0.20 of scape; annellus about 0.30 of pedicel; first funicular segment equal to

pedicel, subequal to second; third funicular segment longest, slightly longer than second; other funicular segments gradually becoming shorter than thicker; club equal to preceding 3 segments combined.

Pronotum faintly striate; parapsidal furrows well developed; scutum rugosostriate, otherwise smooth, shiny and sparsely pubescent; scutellum subtriangular, rugosopunctate; axillae separate; propodeum rugosostriate at the sides with the median area smooth apically; middle metatarsus and second tarsal segment with dentation black; middle tibial spur equal to metatarsus; hind tibial spur short, slender, about 0.25 of metatarsus; hind metatarsus about 0.60 of tarsus; fore wing about 3.50 times as long as wide, spotted; veins *sm* : *m* : *pm* : *st* ratio 100 : 100 : 48 : 24.

Abdomen more than 0.50 of thorax; first tergite with a white patch in the middle and at sides; second tergite about 2 times the third; abdomen apically truncate.

Type locality : Bangalore

Host Eggs of Pentatomid bug.

Anastatus dentatus Narayanan, Subba Rao & Ramachandra Rao

1962 *Anastatus dentatus,* Narayanan *et al., Proc. Nat. Inst. Sci. India,* 26 (B) (4) : 173.

Female Length 2.00-2.50 mm. Head bluish-green, with purplish and aeneous reflections; scape yellowish-brown, rest of antenna dark grey; thorax darkish-green with purplish reflections; abdomen bluish-green, with a hyaline band at base; legs fuscous brown; wings smoky with a transverse hyaline band in the middle and a hyaline patch at base; tergites one and 2 with transverse hyaline band and dark brown spots laterally.

Head transverse, more than 2 times wider than thick anteroposteriorly; vertex and face rugulose, ocellar triangle equilateral; lateral ocelli very near eye but not touching; malar space nearly 0.50 of eyes, sculpturing similar to that of vertex and face, malar furrow distinct; antennae inserted on level of lower orbital border; scape elongate, slightly bent in the middle, longer than pedicel, longer than thick; annellus short, not broader than pedicel; first 2 funicular segments subequal, third slightly longer than the preceding; fourth equal to the first but slightly thicker; fifth a little longer than sixth; sixth and seventh subequal; club broad at base and narrow at apex, about 0.33 of funicle; scrobes not reaching front ocellus, deep at base and shallow at apex.

Thorax 1.50 times longer than broad; prothorax viewed from above triangular with a longitudinal hyaline strip in the middle; scutum with close, honeycomb-like reticulation; scutellum and axillae closely reticulate; axillae widely separated; mesopleura finely

lineolate; propodeum narrow in the middle, wider laterally; wings with a hyaline band in the middle; posterior margin slightly angulated near the lower end; vein *sm* slightly longer than *m, pm* less than 0.50 of *m;* vein *st* nearly tibia with 2 small acute teeth in apical angle; middle metatarsus with 14 short spines; second segment with 6 spines; third and fourth segments with 2 spines each.

Abdomen equal to thorax, narrow at base, widened gradually and rounded at apex; ovipositor slightly exerted.

Male : Length 1.00 - 1.20 mm. Head, thorax and abdomen bluish-green, with purplish reflections; legs darkish-blue, with the exception of hyaline tarsal segments; antenna brownish-black.

Head transverse, 3 times wider than long anteroposteriorly; vertex finely rugulolse; postocellar space 2 times longer than ocellocular; face minutely punctate laterad of the scrobes; scrobes deep, nearly reaching front ocellus; eyes greyish-brown; malar space equal to eyes, malar furrow distinct; scape short, thick, not reaching front ocellus; pedicel very short, much narrower than scape; first funicular segment slightly bent in the middle and a little longer than following 2 segments, which are subequal; fourth slightly longer than fifth and sixth, which are again subequal; seventh distinctly smaller than sixth and narrower; club equal to first funicular segment; sutures indistinct, narrowed laterad towards apex.

Thorax convex; prothorax narrow, transverse; parapsidal furrows distinct, complete; mesonotum lineolate punctate, as wide as head; propodeum narrow in the middle, with a weak median carina; wings hyaline; vein *sm* 1.50 times *m, pm* less than 0.50 of *m, st* more than 0.50 of *pm.*

Abdomen equal to thorax, narrow at base and broadest at apex.

Type locality : Delhi

Distribution : Delhi

Host : Halys dentala Fb.

Anastatus kashmirensis Mathur

1956. *Anastatus kashmirensis,* Mathur, *Proc. R. ent. Soc. London,* (B) 25 : 95.

Female : Length 1.50-2.00 mm. Head metallic-green with a coppery tinge, frons and face with purplish sheen; scape brownish-yellow, pedicel green, rest dark borwn; pronotum metallic-blue with a median orange stripe, brownish-yellow laterally; mesonotum metallic-bluish-green with a purplish reflection; scutellum with a coppery tinge; propodeum purplish; mesopleurae fuscous with purplish tinge anteriorly and testaceous posteriotly; coxa, trochanter and 3 middle tarsal segments brownish-yellow, coxa partly greenish outwardly, femur, tibia, basal and apical tarsal segments dark brown;

middle and hind coxae, femora, tibiae and apical tarsal segments dark brown; wings infumated in the apical 0.50, middle and base 0.50, in between hyaline; apical smoky band a little lighter towards apex; abdomen aeneous with a broad dull white band basal 2 tergites; first tergite with 2 dark brown lateral spots; tip of abdomen dark green; ovipositor pale.

Head broader than long, vertex and frons finely granular; scrobes moderately deep, strongly carinate laterally and above; face elevated and rugulose; front ocellus slightly above scrobes; interocelluar space greater than ocellocular speace; occipital carina fine, evenly rounded above, not attaining top of vertex; sparsely hairy; antennae inserted on level of lower orbital border; scape elongate, not extending front ocellus, subequal to pedicel; annellus and first 3 funicular segments combined; pedicel thick, about 0.33 of scape; first funicular segment longer than thick and slightly smaller than pedicel, second equal, third slightly longer than second, following segments slightly smaller, fourth almost quadrate, 5-7 equal; club much thicker and about 0.50 of funicle; sutures weak.

Thorax as wide as head, slightly shorter than abdomen; pronotum above somewhat triangular, slightly broader than long, mesonotum depressed, scutum punctate, closely reticulate with fine impressed lines, scapulae weakly reticulate anteriorly; scutellum and axillae finely longitudinally striate, axillae separated; mesopleurae finely lineolate, sparsely hairy anteriorly; wings about slightly more than 2 times as long as wide, with speculum about middle of vein *m,* veins *sm : m :pm : st* ratio 100 : 50 : 100 : 48; fore femur slightly longer than tibia; tibia with 2 small, dorsal, apical teeth and a long, ventral, subapical spur, bifid at tip; middle femur as long as tibia, tibia narrower than femur, thickened at apex, with 4 small teeth at apical ventral angle and a long, stout, ventral spur dilated at base; tibial spur much longer than metatarsus, tarsal segments 1-4 with small, black teeth, teeth fewer from metatarsus onwards; hind femur shorter than tibia, tibia about as long as tarsus, spur about 0.50 of metararsus.

Abdomen slightly longer than thorax, narrow at base, widest at fifth tergite, strongly narrowed apically, finely reticulate with impressed lines; ovipositor slightly exserted.

Male : Length 1.25-1.75 mm. Vertex, face, thorax metallic bluish-green, vertex and scutellum with purplish sheen; antennae dark brown, scape yellow ventrally and basally; femora dark brown with bluish-green sheen, fore and middle tibiae and all tarsi yellowish, hind tibia yellowish in basal 0.50 and brownish in apical 0.50, adbomen aeneous-black with bluish-green sheen in basal segments; witngs hyaline, iridescent.

Head broader than long, sparsely hairy; antennae inserted slightly above lower orbital border, with 10 segments; scape short,

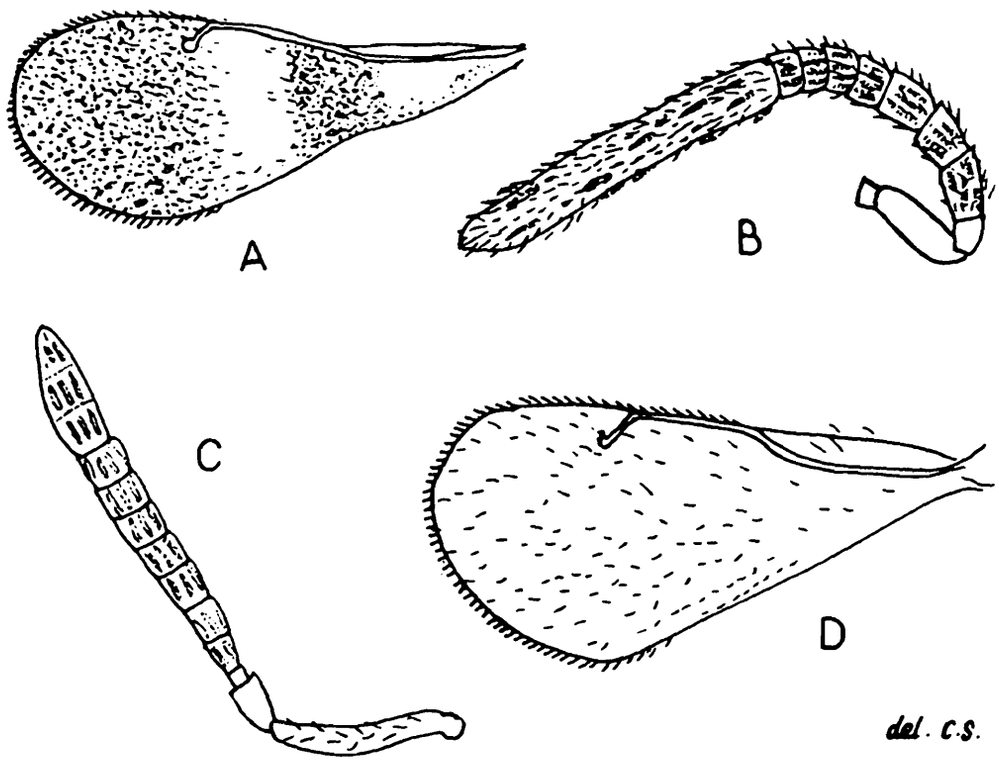

FIG. 159. *Anastatus kashmierensis* Mathur : A. Fore wing, female; B. Antenna, male; C. Antenna, female; D. Fore wing, male. *(Modified from Mathur).*

thick, not extending front ocellus, about 3 times longer than thick, pedicel small, first funicular segment longer than others, 2 times pedicel, second and third segments equal, almost quadrate, following segments gradually shorter, 4-5 equal, 6-7 transverse; club longer than funicular segments and pedicel combined.

Thorax about as wide as head, coarsely hairy, convex; scuttellum and axillae finely reticulate with impressed lines, parapsidal furrows distinct and complete, propodeum small, transverse, with a weak median carina; wings nearly 2 times as long as wide; veins *sm : m : pm : st* ratio 100 : 50 : 100 : 48; fore and hind femora slightly swollen, fore femur slightly longer than tibia, tibia with 2 apical teeth and a long ventral spur, middle and hind femora and tibiae equal.

Abdomen much narrower but longer than thorax.

Type locality : Srinagar

Host : Lymantria obfuscata Walker

This species is also easily distinguished from *A. bangalorensis* Mani and Chandy-Kurian by coloration of legs. position of the transverse hyaline stripe in the fore wing and by the form of antennae in female; in *A. bangalorensis* the first funicular segment is as long as pedicel, and the club equal to last 3 funicular segments combined;

hyaline band of fore wing is somewhat straight, not curved and its outer margin commences from vein *m,* well interior to junction of vein *st.*

Anastatus tenuipes Bolivar & Pieltain

1925 *Anastatus tenuipes,* Bolivar & Pieltain, *Bull. Soc. R. ent. Egypt.,* 9 : 43.
1935 *Anastatus blattidarum,* Ferrière, *Stylops,* 4 : 150.
1936 *Solindenia blattiphagus,* Mani, *Rec. Indian Mus.,* 38 : 131-132.
1938 *Anastatus blattidaraum,*Mani, *Cat. Indian Ins.,* 23 : 84.
1940 *Anastatus blattidarum,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 12.
1960 *Anastatus tenuipes,* Roth & Willis, *Misc. Coll. Smiths Ins.,* 141 : 246.
1967 *Anastatus tenuipes,* Burks, *Trans. Amer. ent. Soc.,* 93 : 430.
1979 *Anastatus tenuipes,* Krombein *et al., Hymen. N. America,* 1 : 888

Female : Length 2.60-3.50 mm. Head metallic-green to blue, with a coppery lusture at certain angles, sparsely pilose; mandibles very dark red, palpi testaceous; scape and pedicel brown; funicle black, sixth and seventh segments much darker; eyes chocolate-red; thorax dark honey-borwn; legs concolorous with thorax; abdomen black, except in the basal 0.33 of whitish.

Mandibles tridentate; antennae slender; scape about 0.33 of flagellum; pedicel about 0.25 of scape; annellus somewhat thicker than long; funicular segments 1-3 subequal; fourth segment shorter than third; fifth shorter than fourth and about 0.75 of third; segments 6-7 equal, each a little shorter than fifth; club about 0.50 of scape, apical segment longest.

Male Length 3.00 mm. Scape smoky-brown; scapula black; legs smoky, mainly testaceous, withitsh colour at base; abdomen more pronounced than in female.

Type-locality Sudan

Distribution Sudan; India : Mysore, Calcutta

Hosts Periplanta americana, Supella supellectilium

Anastatus colemani Crawford

1912 *Anastatus colemani,* Crawford, *Porc. US nat. Mus.,* 42 : 6.
1929 *Anastatus colemani,* Ramakrishna Ayyar, *Bull. ent. Res.,* 20 : 173-178.
1938 *Anastatus colemani,* Mani, *Cat. Indian Ins.,* 23 :84
1940 *Anastatus colemani,* Pruthi & Mani, ICAR Misc. Bull., 30 : 12.

Female : Length 3.50 mm. Head green; face metallic-red; punctate part of mesonotum bronzy, otherwise bluish-green; scutellum bronzy; rest of thorax and legs bronzy or purple; tarsi, fore and middle legs in front reddish-brown; abdomen aeneous, with a white transverse band near hind margin of first tergite; face below antennae rough and granular, reticulate above; scape testaceous; pedicel green; basal funicular segments aeneous.

Pedicel about 2 times as long as thick; first funicular segment about 2 times pedicel; funicular segments 2-5 gradually becoming shorter; segments 6 and 7 subqadrate; club equal to the first funicular segment; median and lateral lobes of mesoscutum finely reticulate, with shallow close punctae behind; scutellum and axillae umbilicately punctate; mesopleura finely striate; fore wing hyaline basally, and with a curved hyaline band in the middle of vein *m;* vein *m* about equal to *sm; pm* about 0.50 of *m. st* less than 0.50 of *pm;* abdomen short.

Type-locality : Bangalore

Host Degonetus serratus

Anastatus amara (Subba Rao)

1957 *Solindenia amara,* Subba Rao, *Proc. Indian Acad Sci.,* 46 (6) : 376.

Female : Length 3.30 mm. Head metallic, with blue-green iridescence and a coppery lustre at certain angles; antennae dark brown, metallic, slender; scape lemon-yellow; pedicel brilliant metallic-green; funicle dark brown; eyes yellow; thorax dark brown; scutellum metallic; fore wings fuscous, with hyaline areas; coxae dark brown; hind tibia dark borwn except at apical 0.33 of whitish; hind tarsus pale yellow; hind tibial spur armed with dark short denticles; abdomen first tergite pale yellow, rest dark brown.

Head viewed from above clothed with silvery-white pubescence, regulosely closely punctate; ocelli large, ocellar triangle acute; interocellar space slightly more than ocellocular space, front ocellar space slightly more than interocellar space; occiput concave; antennae inserted just above mouth border and widely separated; gena and face below the middle with long close setae; scrobe shallow; front ocellus placed outside; head from side slightly more than 0.50 times as wide as high; postorbital space closely punctate; scape slender, slightly more than 0.50 of flagellum; pedical about 0.20 of the length of scape; annellus thicker than longer; funicular segments 1-3 subequal, fourth segment shorter than third, fifth and sixth shorter than fourth, seventh longer than sixth; club slightly less than 0.50 of scape, apical segment longest.

Prothorax narrower than head; parapsidal furrows incomplete; scutellum slightly raised, closely regulosely punctate; tegulae slightly raised; fore wing about 2.50 times as long as wide; marginal fringe moderate; discal ciliation thick; vein *m* slightly longer than *sm,* vein *pm* 2 times longer than *st;* hind tibia not compressed; hind tibial spur 0.33 of metatarsus.

Abdomen slightly shorter than head and thorax combined, finely rugose by punctate; ovipositor concealed.

Male : Like female, but smaller

Type-locality : New Delhi

Distribution : New Delhi

Host : Apanteles delhiensis Subba Rao parasitic on *Hymenia recurvalis* (Linn.)

Anastatus acherontiae Narayanan, Subha Rao & Ramachandra Rao

1962 *Anastatus acherontiae,* Narayanan *et al., Proc. Nat. Ins. Sci. India,* 26 B (4) : 171.

Female : Length 2.00-2.10 mm. Head metallic-bronze, with greenish reflections; scape yellowish, pedicel, funicle fuscous; mesoscutum light fuscous laterally; in the middle, scutellum and axillae metallic-bronze with greenish iridescens; propodeum infuscate, with greenish reflections; pleurae and legs light fuscous brown; wings dusky, with 2 hyaline ovate patches, adjoining apical and inner margins, centrally and another hyaline patch at base; abdomen mostly black, with proximal 0.25 hyaline or light yellowish.

Head transverse, more than 2 times wider than thick antero-posteriorly; vertex, face, scrobe rugulose, with irregular and closely arranged striations, scrobes not very deep, not reaching the anterior ocellus; interocellar space slightly more than 2 times ocellocular; malar space less than 0.50 of eye; antennae inserted just below the level of lower orbital borders; segment 13; scape extending to vertex, slightly bent in middle; pedicel more than 2 times the first funicular segment; segments 2-4 subequal; fifth segment slightly shorter; segments 6-8 subequal, thicker; club as long as preceding 3 segments combined.

Pronotum smooth, impunctate; middle lobe of mesonotum with distinct symmetrical reticulations, lateral lobes smooth, strongly shining; scutellum and axillae sculptured like middle lobe of mesoscutum but more closely reticulate; mesopleura faintly lineolate, shining; vein *sm* as *m; pm* more than 2 times longer than vein *st.*

Abdomen more or less equal to thorax, broadening gradually from base to apex, where it is accuminate; first tergite with a hyaline band.

Male : Not known.

Type locality : Delhi

Distribution : Delhi

Host : Acherontia styx Westwood

Anastatus vermai (Bhatnagar)

1951 *Solindenia vermai,* Bhatnagar, *Indian J. agric. Sci.,* 21 (2) : 162

1957 *Solindenia vermai,* Subba Rao, *Proc. Indian Acad. Sci.* (B) 46 (6) : 378

Female : Length 3.00 mm. Body generally dark metallic-green; vertex clothed with silvery-white pubescence; antennae dark brown; tegulae dark brown; wings hyaline; legs with coxae black; hind tibiae not compressed, dark borwn except at apical 0.33 of whitish; hind tarsi brown except the lase segment black; fore and hind tibiae slightly darker in basal 0.50; mid metatarsus armed below with short black denticles; ovipositor sheath black both at extreme base and at apex but white in the middle.

Head viewed from above, rugulosely, closely punctate; ocelli small and arranged in a triangle; about 2 times as wide as long; ocelli nearer to eyes than to each other, hence ocellocular space less than the interocellar; front ocellar space slightly less than the interocellar; occiput concave and longitudinally striated; viewed in front, antennae inserted far below the middle of face, near the mouth border; face in the middle shagreened; gena and face below the middle covered with long villous setae and closely, rugulosely punctate; interorbital space less above than below; genal space 0.50 of inner orbital length; face not deeply excavated but only with scappal furrow, front ocellus not within this; antennae inserted close to mouth border and wide apart from each other; viewed from side 0.50 times as thick as high; postorbital space closely and shallowly punctate; antennae segments 13 : 1. 1 .8.3; scape cylindrical, 5.50 times as long as thick, 3 times the first funicular segment; funicle with the first segment shortest, 2-4 cylindrical, longer than thick, about 3 times as long as thick; last segment of the funicle as long as thick and shorter than second in length; club longer than the 2 preceding segments of the funicle.

Thorax slightly narrower than head; parapsidal furrows incomplete, visible only in basal 0.50; prothorax narrower, rectangular; scutellum evenly shallowly punctate; mesopleurae dull and without femoral impression, closely and finely punctate; fore wing about 3 times as long as broad; marginal fringe moderate; discal ciliation dense; an oblique hairless line runs from a little beyond the middle of vein *m;* vein *sm* equal to *m;* vein *pm* equal to *st;* hind tibial spur single and 0.33 of metatarsus; metatarsus not flat; single middle tibial spur as long as the mid metatarsus.

Abdomen as long as head and thorax combines; segments equal and smooth; ovipositor exserted.

Type locality : Kanpur

Host : Epilachna

Anastatus (Cladanastatus) umae Boueck

1979 *Anastatus (Cladanastatuss) umae,* Boucek, *Bull. ent. Res.,* 69 : 93-96

Female : Length 3.40-5.00 mm. Body blackish-purple, partly with slightly violaceous sheen; reddish-purple on scutum and less so on scutellum; antennae and tarsi partly brownish, middle tibia

and tarsus in front paler, tibial spur black; pale cross band on second tergite; ovipositor except basally pale testaceous; fore wing infuscate in the apical 0.66, pale behind vein *m* and tip, basal 0.33 of subhyaline, with infuscation basally, a curved streak below end of basal cell and fuscous streak in the middle of vein *sm*.

Head considerably flattened; viewed from above with temples narrow; occiput obtusely margined above; head to thorax width 15 : 13; height to thickness 13 : 6; frons and vertex shiny, obscurely finely reticulate; vertex, temples and genae with short black pubescence; frons wider below than above, flat; scrobes shallow; outer margins carinate, almost parallel to orbit; gena in front view converging but swollen near mouth; antenna elongate slender; scape about 0.33 of flagellum; pedicel about 2 times annellus, which is longer than wide; first funicular segment 2.10-2.50 times pedicel; club slightly shorter than preceding 2 segments combined.

Thorax mostly bare, except for scattered short setae mainly on the sides of pronotum, finely reticulately punctate, becoming smooth posteriorly; scutellum and axillae as deeply reticulately punctate as scutum; without striae; scutellum about 1.30 times as long as wide; propodeum smooth, bare except for a few hairs on metapleural line, with distinct submedian depressions and with conspicuous longitudinal convexity sublaterally; prepectus about 1.80 times as long as borad, ventrally emarginate in the anterior third; mesopleura in the median third extremely finely, longitudinally striate, with whitish and rather short pubescence; fore femur subtriangular, lamellate beneath apically, broadest in the apical sixth (60 : 22); hind coxa dorsally bare; fore wing behind vein *sm* bare, including infuscate area; costal cell in median 0.40 with hairs reduced to one line; veins *m* : *pm* : *st* ratio 50 : 21 : 10; *st*-knob minute.

Abdomen subequal to but distnctly narrower than thorax; anterior 0.50 smooth, posterior 0.50 faintly reticulate; ovipositor about 0.38 of abdomen, about 0.42 of hind tibia; hypoygium slightly middle of abdomen.

Male : Length 2.70-3.10 mm. Dark metallic-bluish mainly on thorax, abdomen greenish-black; tarsi white, but infuscate apically; wings hyaline.

Head in dorsal view about 2.25 times as broad as long, 56 : 25 with relative breadth of frons 31; antennae most characteristic, with narrow annellus, following 4 segments each with a long branch; head, thorax with short pubescence and distinctly though finely reticulate; parapsidal furrow in hind 0.25 impressed parallel; axillae nearly contiguous; frenal area narrow, confined to sloping apex of scutellum, only slightly broader than 0.50 of length of metanotum in middle; fore wing about 2.28 times as long as wide; with several hairs below parastigma, otherwise proximal 0.33 bare; veins *sm* : *m* : *pm* : *st* ratio 50 : 27 : 15 : 9.

Type locality : Kambadapalli (Chittor Dist.)

Distribution : Bangalore

Host : Unkown

This species is unique in Eupelminae in having branched antennae in males; otherwise branched antennae are known only in Calosotinae. Female of *A. umae* is close to *Anastatus* Motsch. *A. umae* and some species from Malaysia form a group characterised by pedicellus less than 0.50 of second flagellar segment which itself is longer than club; fore femur subtriangularly expanded; sublateral ridges of mesocutum carinate behind; fore wing infuscate, without speculum; abdomen in female, only slightly widened posteriorly; hind margin of first tergite broadly, angularly incised; margin of second tergite broadly produced but emarginate medially; ovipositor clearly protruding; antennae in male branched. These characters separate this species into the subgenus *Cladanastatus,* with *A. umae* as its type.

Species Incertae Sedis

Anastatus coimbatorensis Girault

1920 *Anastatus coimbatorensis,* Girault, (Original descript. could not be tracaed)

1921 *Anastatus coimbatorensis,* Ramachandra Rao, *Rep. Proc. Fourth Ent. Meet. Pusa,*42.

1938 *Anastatus coimbatorensis,* Mani, *Cat. Indian ins.,* 23 : 12

1940 *Anastatus coimbatorensis,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 12.

Type locality : Coimbatore

Anastatus indicus Ferrière

1938 *Anastatus indicus,* Ferrière, *Ann. Soc. ent. France,* 107 : 49-50.

Type locality : India

Anastatus mantoidae Motschulsky

(Fig. 160)

1859 *Anastatus mantoidae,* Motschulsky, *Etud. Ent.,* 8 : 116 pl.2, fig. 11.

1863 *Anastatus mantoidae,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 57. pl. fig. 11.

1898 *Prodagrion mantoidae,* Dalla Torre, *Cat. Hymen.,* 5 : 280

1909 *Podagrion mantoidae,* Schmiedeknechnt, *Gen. Ins.,* 97 : 117.

1938 *Podagrion mantoidae,* Mani, *Cat. Indian Ins.,* 23 : 42.

1940 *Podagrion mantoidae, Pruthi &* Mani, *ICAR Misc. Bull.,* 30 : 3.

Female : Length 3.75 mm. Body metallic-green; head above bluish-black antennae, abdomen, femora and tibiae more or less black; antennal base, first tergite, coxae, tibial tips, tarsi testaceous; wings infuscate behind vein *sm.*

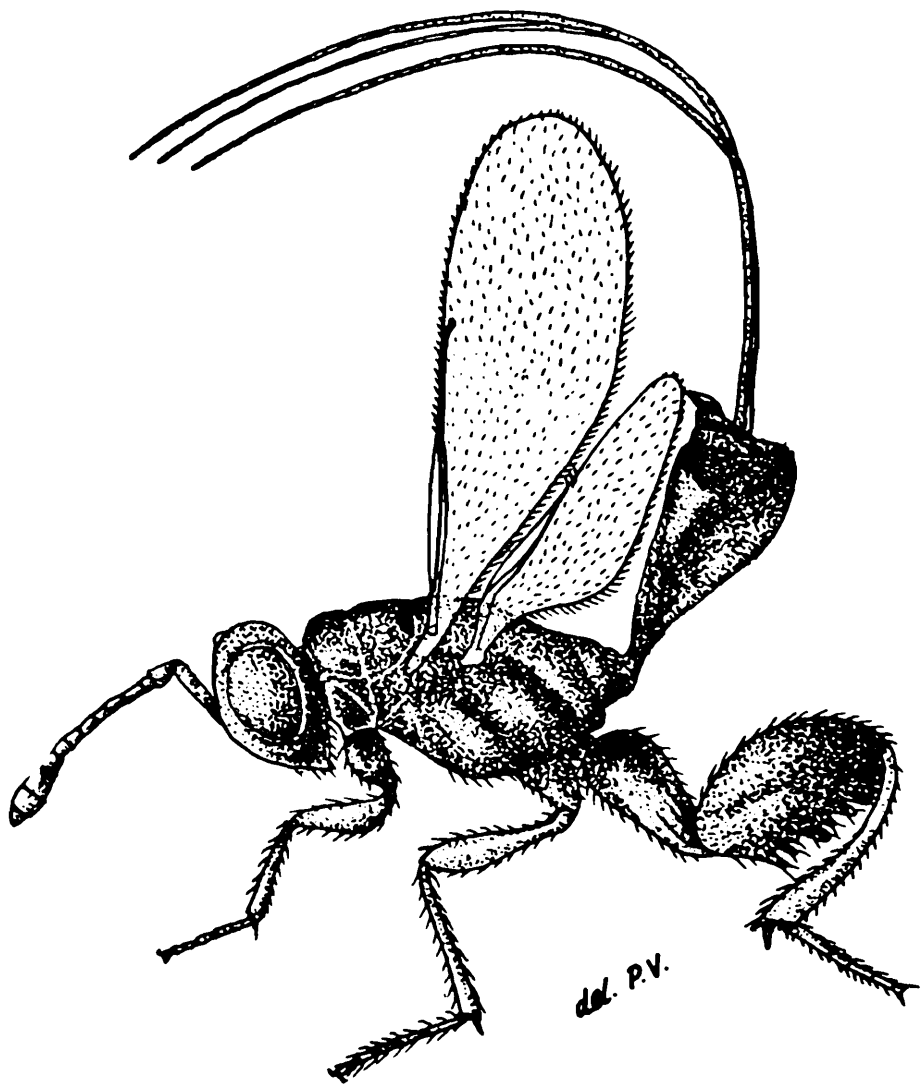

FIG. 160. *Anastatus mantoidae* Motschulsky, female.

Head transverse, clothed with pale hairs; triangularly impressed above antennae; antennae subequal to head and thorax combined, clavate, apically sublaterally acuminate; scape elongate, cylindrical; pedicel obconic; first funicular segment short, slightly dilated; second funicular segment slightly longer; segments 3-8 gradually becoming shorter apically, subdilated; terminal segment conical, acuminate, shorter scape.

Thorax oblong-ovate, finely punctate; shiny, impressed in the middle; parapsidal furrows complete; scutellum large, triangular, opaque; abdomen glabrous, depressed, subovate, acuminate, apically; middle tarsal segments 1-2 dilated, spined internally; tibiae slightly swollen apically.

Type locality : Ceylon

Distribution : Ceylon

Host : Praying-mantis

Anastatus sp. Ramakrishna Ayyar

1925 *Anastatus sp.*, Ramakrishna Ayyar, *Spol. Zeyl.*, 13 : 247
1927 *Anastatus sp.* Ramakrishna Ayyar, *Bull. ent. Res.*, 18 : 77.
1938 *Anastatus sp.*, Mani, *Cat. Indian Ins.*, 23 : 84

Undescribed species recorded as having been reared from eggs of the grasshopper *Oxya velox.*

Type locality : Coimbatore

Host : Oxya velox.

Neanastatus Girault

1913 *Neanastatus,* Girault, *Bull. Wisc. Nat. Hist. Soc.*, 11 : 35.
1915 *Neanastatus,* Girault, *Mem. Queensland Mus.*, 4 : 29.
1915 *Solindinelleus,* Girault, *Mem. Queensland Mus.*, 4 : 35.
1926 *Metaplopoda,* Masi, *Konowia,* 5 : 275.
1935 *Neanastatus,* Mani, *Rec. Indian Mus.*, 37 : 254.
1938 *Neanastatus,* Mani, Cat. Indian Ins., 23 : 81.
1938 *Neanastatus,* Ferrière, *Ann. Soc. ent. France,* 107 : 59, 71-72.
1952 *Neanastatus,* Risbec, *Mem. Inst. Sci. Madagascar,* (E) 2 : 109.

Head rounded in front; postantennal furows absent; vertex carinately margined behind; eyes minute, ovate, glabrous; antennae inserted in the middle of face, with 10 segments : 1.1.1.5.2; pronotum large, triangular; mesonotum elongate, without parapsidal furrows, a little elevated in the middle; scutellum small, triangular, with one median longitudinal groove; axillae very small; propodeum very small; mesopleura large; middle legs very long; middle tibial spur longer than metatarsus; fore wings straight, with vein *m* very long, *pm* long, *st* short, speculum oblique; abdomen straight, pointed apically; ovipositor a little exserted.

Type-species : Neanastatus cinctiventris Girault.

KEY TO SPECIES

1.	Body yellowish-green or orange-yelow	2
	Body metallic-green	3
2.	First funicular segment subequal to scape	*Neanastatus grallarius* (Masi)
	First funicular segment 0.67 of scape	*Neanastatus trochantericus* Gahan
3.	Body dark metallic green, marked with yellow	*Neanastatus pulchericorpus* (Girault)
	Body metallic-green and black	*Neanastatus ramakrishnai* Mani

Neanastatus grallarius (Masi)

(Fig. 161)

1926 *Metalopoda grallaria,* Masi, *Konowia,* 5 : 276.
1938 *Neanastatus grallarius,* Ferrière, *Ann. Soc. ent. France,* 107 : 61.

Female Length 3.35 mm. Head and thorax obscure yellowish-green; mesonotum yellow; mesopleura and abdomen fuscous; scape yellowish-brown; fore leg straw-coloured; middle tibial and tarsal spines black; hind coxae straw-coloured; hind femora and tibiae black.

Head as wide as thorax, viewed in front cordate, front ocellar space about 1.20 times interocellar space; genal sulcus distinct; head umbilicately punctate, scape about 0.30 of flagellum; annellus transverse; funicular segment gradually becoming thickened; first funicular segment subequal to scape; second a little shorter, club, nearly 2 times the preceding segment.

Pronotum with setigerous punctate, minutely reticulate; scutellum triangular with longitudinal sulcus; axillae well separated; fore wing narrow; veins *sm* and *m* in a straight line; middle leg elongate; middle femora equal to thorax; middle tibiae with long acute spines, tarsi pinnately spinous, about 0.60 of tibiae; tarsal segments ratio 40 : 10 : 7 : 6 : 8; metatarsus with 16, second tarsal segment with 16, third segment with 5, fourth with 4, lateral spines; hind femora reaching to 0.30 of abdomen; hind tibiae equal to femora; hind tarsal segmental ratio 28 : 11 : 9 : 7 : 5.

Abdomen equal to head and thorax, squamously reticulate.

Type locality : China : Cantan

Distribution : China; India : Puri

Host : Pachydiplosis oryzae Mani

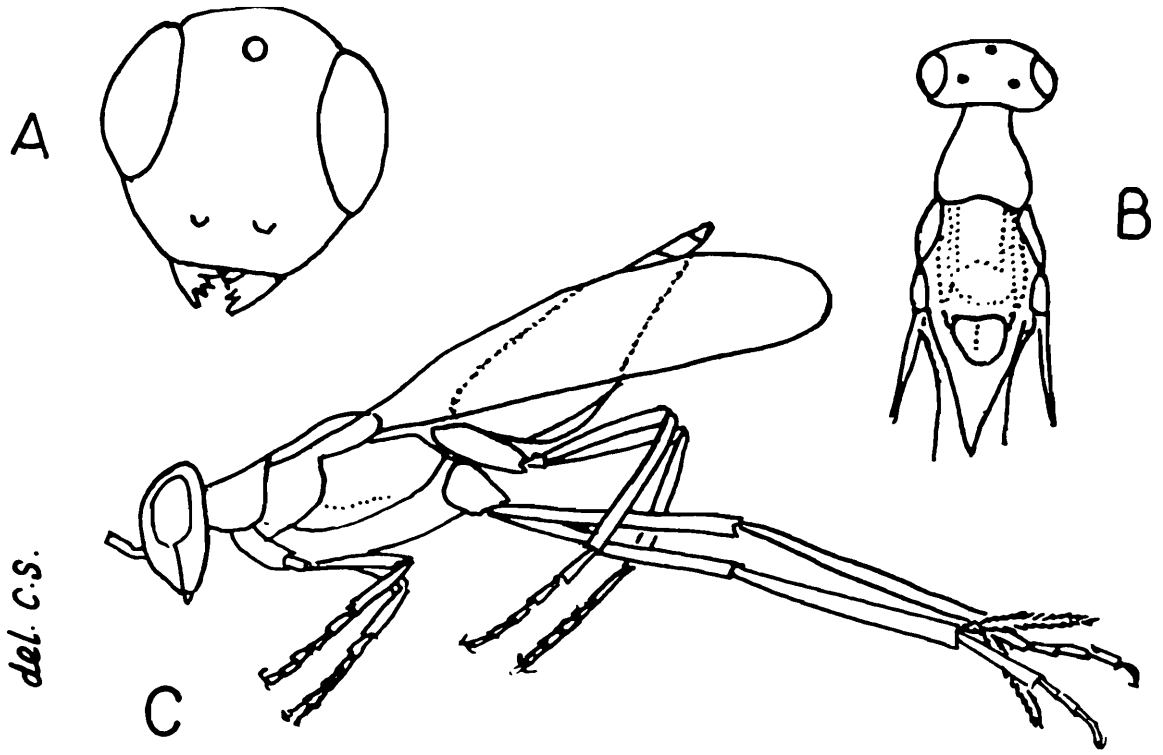

FIG. 161. *Neanastatus grallarius* (Masi); A. Head in front view; B. Head, thorax and body; C. Body entire.

Neanastatus trochantericus Gahan

1919 *Neanastatus trochantericus,* Gahan, *Proc. US nat. Mus.,* 56 : 520
1938 *Neanastatus trochantericus,* Mani, *Cat. Indian Ins.,* 23 : 81

Female : Length 3.50 mm. Body generally light orange-yellow; antennae, vertex and frons, transverse blotch on occiput, posterior margin of pronotum medially more or less, tegulae apically, scutellum, hind femora and tibiae, and apical 4 segments of the fore and middle tarsi brownish-testaceous or fuscous; basal hind tarsal segments white; apical 4 segments black; abdomen with 2 broad blackish bands; one some distance before the middle, other before apex; sometimes with an obscure brownish band near base and another between the 2 blackish bands.

Vertex and frons opaque, with close, shallow umbilicate punctae; face below antennae and cheeks finely lineolate; antennae slender; club thickened; scape equal to pedicel, annellus and first funicular segment combined; pedicel obconic, about 2 times as long as thick at apex; annellus strongly transverse; first funicular segment 0.67 of scape; second funicular segment 1.50 times a long as scape; third nearly 0.80 of the second fourth slightly more than 0.50 of the second and about 0.20 times longer than thick; club a little longer than funicular segment 4 and 5 combined; apical segment much longer than the basal one.

Pronotum conically produced, as long as mesoscutum, with faint scale-like sculpture; mesoscutum and scutellum sculptured like pronotum; mesoscutum depressed down the middle; scutellum with a deep median groove; sides of pronotum and mesopleura finely lineolate-reticulate; posterior 0.50 of mesopleura very finely longitudinally striate; fore wing long and rather narrow, strongly infuscate from a short distance proximad of vein *st* outwardly to apex; apex somewhat lighter, rest of wing hyaline; vein *pm* at least 4 or 5 times as long as *st;* legs long, slender; middle legs especially long, trochanter with a short but distinct spine-like process dorsally; middle tibiae outwardly with short black bristles along either margin and terminating apically in a comb of short black spines; middle tibial spur as long as the 3 basal segments of tarsi combined, metatarsus with a single row of black spines beneath.

Abdomen slender, distinctly longer than the head and thorax, subcompressed and conical; ovipositor sheaths barely showing at apex.

Type locality : Coimbatore : S. India

Host : Unidentified insect on *Ischaemum ciliare*

Neanastatus pulchricorpus (Girault)

1913 *Solindinelleus pulchricorpus,* Girault, *Jahrg. Ent. Soc.,* 29 : 22.
1915 *Solindinelleus pulchricorpus,* Girault, *Mem. Queensland Mus.,* 4 : 35.

1919 *Neanastatus pulchricorpus,* Gahan, *Proc. US nat. Mus.,* 56 : 520.
1935 *Neanastatus pulchricorpus,* Mani, *Rec. Indian Mus.,* 37 : 255
1938 *Neanastatus pulchricorpus,* Mani, *Cat. Indian Ins.,* 23 : 81.
1938 *Neanastatus pulchricorpus,* Ferrière, *Ann. Soc. ent. France,* 107 : 60

Female : Length 2.79 mm. Body dark metallic-green; scutellum coppery; marked with bright lemon colour as follows; head except centre of vertex; between lateral ocelli and broad stripe from side to side (eye to eye) of the occiput; legs except the basal 0.50 of hind coxae, basal 0.66 of hind femora, all tibiae (except base and tips) dusty, distal tarsal segment and tip of middle tibial spur; promial 0.33 of tegulae and a whitish band around the hind margin mesonotum; an orange-yellow; transverse elliptical spot of propodeum, each side of meson, just one each side of the tip of scutellum; antennae brown, scape yellow below, pedicel yellow tip; head and scutum with irregular more or less obscure punctae; mesonotum densely reticulate; abdomen with a dusky-yellowish stripe base; large triangular lemon-yellow spot in front on mesopleura.

Type locality : Coimbatore

Distribution : India

Host : Unknown.

Neanastatus ramakrishnai* Mani

1935 *Neanastatus ramakrishnai,* Mani, *Rec. Indian Mus.,* 37 : 255.
1938 *Neanastatus ramakrishnai,* Mani, *Cat. Indian Ins.,* 23 : 81.

Female : Length 2.00 mm. Body metallic-green and black; head brownish-black, metallic-green behind; scape brown, rest of antennae dark brown; thorax dark bluish-black; mesonotal impression metallic-green, fore wing dark brown, hyaline basally, with a long oblique transparent hairless broad line from vein *st,* to almost hind margin, lighter apically; fore legs brownish-black; middle leg dark brown, tip of femora reddish-brown; hind legs brownish-black; abdomen black.

Head finely minutely punctate; scrobes not very deep; funicular segment short, subcylindrical, segments 6 and 7 subequal; club with 2 segments, about 4 times the last funicular segment; mesonotum smooth; scutellum finely punctate vein *m* about 0.20 of *sm*; *pm* about 3 times *st;* middle tibia tridentate; apical spur stout, a little longer than metatarsus, which latter is subcompressed, swollen; with 7 teeth; second segment with 3 teeth, third segment with 2 teeth; fourth and fifth segments with very minute rudimentary teeth.

Type locality : Howrah

Distribution : Calcutta

Host : Unknown

* This species is perhaps correctly to be placed in *Anastatus* Motsch.

GENUS INCERTAE SEDIS

Cacotropia Motschulsky

1863 *Cacotropia,* Motschulsky, *Bull. Soc. Imp. Natl. Moscou,* 36 (3) : 55.
1904 *Cacotropia,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 289.
1909 *Cacotropiaa,* Schmiedeknecht, *Gen. Ins.,* 97 : 185.
1938 *Cacotropia,* Mani, *Cat. Indian Ins.,* 23 : 83.

Body elongate, sides parallel, depressed, legs long, slender, tarsi long with 5 segments; head flattened above; scrobe deep, converging above; terminal papal segment elongate; eyes oval, large, hairy; antennae clavate, inserted somewhat above the middle of face, with 9 segments : scape 0.33 of funicle; pedicel 0.25 of scape, obconical; annellus long; segments 3-6 gradually thicker and shorter; sixth segment almost transverse; seventh segment 2 times longer, ovate, compressed; scutellum broad basally; axillae almost contiguous; metatarsus equal to the following 2 segments combined; middle legs dilated, short, spined apically; fore femora not swollen; fore wing short, narrow; abdomen long, pointed; first tergite incised behind in the middle.

Type-species : *Cacotropia echidna* Motschulsky

Cacotropia echidna Motschulsky

1863 *Cacotropia echidna,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (2) : 57.
1909 *Cacotropia echidna,* Schmiedeknecht, Gen. Ins., 97 : 186.
1938 *Cacotropia echidna,* Mani, *Cat. Indian Ins.,* 23 : 83.

Female : Length 3.25 mm. "Elongata, subparallela, subdepressa antice punctulato-rugulosa, postice nitida, nigra, metallico, plus minusve resplendens, fronte cupreo, abdomine antice albo, postice subviolaceo, apice viridi, scapo, thoracis lateribus tibiarum basi et apice tarsique plus minusve rugo-testaceis, funiculis basi strigaque obliquag pronotis virdi-metallicis, alis abdomine non longioribus, infuscatis, his basi, maculis duabus oblongis subpostice apiceque translucidis; capite elevato, fere rejecto, reguloso, rotundato-triangulare, fronte bisulcato; ocellis minutis, productis, piceis, oculis magnis, convexis, prominulis, rufescentibus, antennis thoracis longituine valde fractis, funiculo subsolido-vix clavato; thorace oblongo, medio densissime punctato opaco, laterliter glabro, nitido, pronoto medio longituinaliter excavato, lateribus convexis, elevatis, mesonoto plano, ovato, velutino-nigro, metanoto trapezoidalem inaequale, nitido; abdomine lato-sessile, glabro; pedibus tenuis, compressis, femoribus linearis, tarsis medis dilatatis."

Type locality Mt. Patannas

Host : Praying mantid oothecae

FAMILY ENCYRTIDAE

1837 *Encyrtidae,* Walker, *Ent. Mag.,* 4 : 439.
1840 *Encyrtidae,* Westwood, *Introd. Modern Classif. Ins.,* 2 : 166.
1846 *Eupelmidae* (partim) Walker, *List. Chalcidae, Brit. Mus.,* 1 : 52.
1846 *Encyrtidae,* (partim) Synop. p.66 *List. Chalc. Brit. Mus.,* 1 : 53.
1848 *Pteromalidae* (partim) Walker, *List. Chalc. Arit. Mus.,* 2 : 104.
1856 *Encyrtoidae,* Förster, *Hymen. Stud.,* 2 : 18, 21, 32.
1875 *Encyrtina,* Thomson, *Hymen. Skand.,* 4 : 12 : 112.
1886 *Encyrtinae,* Howard, *Ent. Amer.,* 1 : 198, 216.
1892 *Encyrtidae,* Howard, *Proc. U.S. net. Mus.,* 15 : 361-369.
1897 *Encyrtidae,* Ashmead, *Proc. ent. Soc. Washington,* 2 : 236.
1898 *Encyrtidae,* Howard, *Proc. US nat. Mus.,* 21 : 231-248.
1900 *Encyrtidae,* Ashmead, *Proc. US nat. Mus.,* 22 : 202.
1904 *Encyrtidae,* (Partim) Ashmead, *Mem. Carnegie Mus.,* 1 : 230, 286, 486.
1904 *Encyrtidae,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 292, 496.
1909 *Encyrtinae,* Schmiedeknecht, *Gen. Ins.,* 97 : 190.
1913 *Encyrtidae,* Girault, *Proc. US nat. Mus.,* 45 : 189.
1915 *Encyrtidae,* Girault, *Mem. Queènsland Mus.,* 4 : 1-184.
1916 *Encyrtidae,* Viereck, *Connecticut. Geol. Nat. Hist. Surv. Bull.,* 22 : 445.
1919 *Encyrtidae,* Mercet, *Bull. Soc. Espan. Hist. Nat. Madrid.,* 19 : 470-478.
1921 *Encyrtidae,* Mercet, *Fauna, Iberica.*
1922 *Encyrtidae,* Timberlake, *Proc. Hawaii. ent. soc.,* 4 : 183-196.
1923 *Encyrtidae,* Ruschka, *Verh. zool. bot. Ges. Wein.,* 72 : 1-13.
1925 *Encyrtidae,* Ishii, *Imp. Plant Quarant. Serv. Yokokhama Tech. Bull.,* 3 : 21 : 30.
1926 *Encyrtidae,* Compere, *Univ. Calif. Pub. Ent.,* 4 : 33-50.
1928 *Encyrtidae,* Compere, *Univ. Calif. Pub. Ent.,* 4 : 209-230.
1932 *Encyrtidae,* Mercet, *Soc. Ent. France Livre Centen.,* 681-687.
1938 *Encyrtidae,* Mani, *Cat. Indian Ins.,* 23 : 16.
1941 *Encyrtinae,* Ceballos, *Trib. Himenopt. Espana,* : 168.
1952 *Encyrtidae,* Nikolskaya, *Obl. Akad. Nauk. SSSR,* Chalcidoidea 324.
1956 *Encyrtidae,* Hoffer, *Sb. Narod. Mus. Praze.,* 11 (1) : ent., 1-22
1956 *Encyrtidae,* Richards, *Hand., Ident. Brit. Ins.,* 6 (1) : 67.
1958 *Encyrtidae,* Ferrière *et.* Kerrich, *Hand. Ident. Brit. Ins.,* 8 (2) : 5.
1968 *Encyrtidae,* Trjpitzin, *Trudi Vses. ent. Obsh.,* 44-62.
1971 *Encyrtidae,* Trjpitzin, *Trudi Vses. ent. Obsh.,* 68-155.
1975 *Encyrtidae,* Alam *et al., Aligarh Muslim Univ. Mon.,* 9 : 1-112.
1975 *Encyrtidae,* Shapae *et al., Aligarh Muslim Univ. Mon.,* 10 : 1-125.
1977 *Encyrtidae,* Trjpitzin, *Trudi Vses. ent. Obsh.,* 58 : 145-199.
1979 *Encyrtidae,* Krombein *et al.,* Hymen. N. America, 1 : 890.

This family is readily recognized by the greatly elongated and thick middle tibial spur, much larger than others; absence of femoral impression on mesopleura; vein *m* rarely very long, most usually short and punctiform, always much shorter than vein *sm*; vein *st* most usually short; scutellum never transverse; middle tibia without lateral spines; sometimes apterous; antennae often fotiaceously expanded.

Classification

Encyrtidae were first recognised by Walker in 1837 and later redefined by Förster in 1856, but Mayr in 1875 made the first important contribution to our knowledge of the family. Ashmead's classification and tables of genera, with all their errors and defects, remain irreplaceable even today. Among the other students of the family since Ashmead, mention may be made of Howard, Girault, Mercet, Ishii, Nikolskaya, Erdös and Novicky, Compere and Annecke, Trjpitzin, Tachikawa, De Santis and others. In India Alam, Agarwal, Shafee, Hayat and Subba Rao stand foremost among those who have substantially enriched our knowledge of genera and species of the family.

Since Ashmead, numerous attempts have been made to divide Encyrtidae into subfamilies, tribes and genera-groups. There has not been agreement indeed even regarding the precise limits of the family, Girault combined, for example, Aphelinids with Encyrtids; he recognised the subfamilies Eupelminae, Tanaostigminae, Aphelininae, Signiphorinae and Encyrtinae. He divided the last subfamily into five tribes Mirini, Eucomyini, Ectromini, Encyrtini and Arrhenophagini. In 1921, Mercet correctly removed the Eupelmids, Signiphorids, Aphelinids and Tanaostigmids from the true Encyrtids. He divided the Encyrtidae into the subfamilies Arrhenophaginae, Encyrtinae and Antheminae. In place of tribes, Mercet recognized the following groups of genera:

1. *Rhopus* — group of genera

Frons very wide, eyes small; funicle in female with 5 and male 6 segments; vein *sm* short; vein *m* punctiform; veins *pm* and *st* obscure; metatarsus equal to the terminal tarsal segment; terminal abdominal tergite hardly retracted. *Rhopus* Förster

2. *Leptomastix* — group of genera

Body not metallic-coloured; mandibles bidentate apically; maxillary palpi with 2, 3 or 4 and labial palpi with 1, 2 or 3 segments; frons very wide; inner orbital margins parallel; antennae filiform in both sexes; in male very distinctly with long verticillate hairs; terminal abdominal tergite, strongly retracted forward to the base more or less in female; wings fully developed; sexual dimorphism not conspicuous.

Anomalicornia Mercet, *Anusia* Förster, *Thomsonisca* Mercet, *Doliphoceras* Mercet, *Pholidoceras* Mercet, *Philoponectroma* Bréthes; *Leptomastidea* Mercet, *Callipteroma* Motschulsky; *Leptomastix* Förster, *Gyranusa* Mercet, *Anagyrus* Howard.

3. *Ectroma* — group of genera

Body rarely metallic-coloured; mandibles bidentate apically; maxillary palpi with 4 or 3 segments, labial palpi with 3 or 2 segments;

antennae generally long, or almost similar in both sexes; pronotum large, mesoscutum generally short and transverse; wing infuscate or spotted; vein *m* relatively long; species brachypterous; generally fully winged; sexual dimorphism rare.

Dicarnosis Mercet, *Dinocaresilla* Mercet, *Dinocarsis* Förster, *Dusmetia* Mercet, *Ectroma* Westwood, *Ericydnus* Walker

4. *Mira* — group of genera

Body yellow, brown or with yellow portions; mandibles tridentate apically, maxillary palpi with 4 and labial palpi with 3 segments; antennae similar in both sexes; pronotum large, mesoscutum short and transverse, propodeum well developed; sexual dimorphism slight, species brachypterous.

Pezobius Förster, *Mira* Schellenberg, *Metanotalia* Mercet, *Beocharis* Mayr, *Echthroplexiella* Mercet.

5. *Aphycus* — group of genera

Body yellow, orange, black, metallic, dull or slightly shiny; mandibles tridentate apically, maxillary palpi with 2, 3 or 4 and labial palpi with 2 or 3 segments; funicular segments in female 5 or 6, club 2 or 3; in male club entire, sometimes apparently triarticulate; wings hyaline, vein *m* punctiform or very short; sexual diamorphism is slight, rarely wings reduced.

Acerophagus Smith, *Aphycus* Mayr, *Paraphycus* Girault, *Aenasioidea* Girault, *Heterarthrellus* Howard, *Blastothrix* Mayr

6. *Encyrtus* — group of genera

Mandible more or less tridentate apically, exceptionally with 4 teeth; maxillary palpi with 4 and labial palpi with 3 segments; club in female (except in *Ageniaspis)* triarticulate; entire in male (except in *Parageniaspis)*; wings large well developed; vein *m* short or punctiform; costal cell of hind wing absent or almost absent; rarely wings reduced; sexes different.

Parablastothrix Mercet, *Prinomitus* Mayr, *Metaprionomitus* Mercet, *Schedioides* Mercet, *Coccidencyrtus* Ashmead, *Ooencyrtus* Ashmead, *Schedius* Howard, *Ilicia* Mercet, *Ceballosia* Mercet, *Ageniaspis* Dahlbom *Parageniaspis* Masi, *Epiencyrtus* Ashmead, *Aclelencyrturus* Ashm., *Parasyrpophagus* Girault, *Mictroterus,* Thomson, *Trichomasthus,* Thomson, *Syrpophagus* Ashmead, *Aphidencyrtus* Ashmead, *Subprinomitus* Mercet; *Superprionomitus* Mercet, *Paraphaenodiscoides* Mercet, *Encyrtus* Dalman, *Mayridia* Mercet.

7 *Metallon* — group of genera

Mandibles with 4 teeth apically; maxillary palpi with 4 and labial palpi with 3 segments; funicle with 5 segments; wings large; costal cell absent in hind wing; body metallic coloured.

Trechnites Thomson (= *Metallon* Walker)

8. *Copidosoma* — group of genera

Mandibles with 3 teeth apically; maxillary palpi with 4 and labial palpi with 3 segments; vein *m* very short or punctiform, costal cell narrow in hind wing, hardly visible; antennae similar in both sexes, but club entire in male; wings rarely reduced.

Paralitomastix Mercet, *Litomastix* Thomson, *Cerchysius* Westwood, *Copidosoma* Ratzeburg, *Scalometopia* Mercet, *Psilophrys* Mayr, *Homototylus* Mayr, *Isodromus* Howard, *Homolotyloidea* Mercet.

9. *Tetracnemus* — group of genera

Body mostly dark metallic-coloured; mandibles generally bidentate, rarely tridentate, third tooth hardly visible, sometimes replaced by a truncature; maxillary palpi with 3 or 4 segments and labial with 2 or 3 segments; antennae branched or fusiform in male, filiform in female; middle tibial spur shorter than metatarsus; sexes very different.

Tricnemus Mercet, *Tetracladia* Howard, *Diversicornia* Mercet, *Lyka* Mercet, *Euzkadia* Mercet.

10. *Eucomys* — group of genera

Body non-metallic; mandibles with 1 tooth; maxillary palpi with 4 and labial palpi with 3 segments; wings generally spotted or infumate; vein *st* long; costal cell of hind wing large; sexes hardly different.

Prionomastix Mayr, *Eucomys* Förster

11. *Bothriothorax* — group of genera

Body dark coloured. Mandibles with 2 or 3 teeth apically; maxillary palpi with 4 and labial palpi with 3 segments, head rugosy punctae, or with large umbilicate punctae, antennae similar in both sexes, rarely branched or with verticillate hairs in male; club distinctly triarticulate in both sexes; wings infuscate with dark bands or hyaline; vein *st* issuing distinctly from *sm;* costal cell in hind wing large; sex dimorphism pronounced; wings rarely reduced.

Zeteticontus Silvestri, *Coccidoxenus* Crawford, *Bothriothorax* Ratzeburg, *Eucantabria* Mercet, *Coccidoxentopteras* Mercet, *Rhinocyrtus* Mercet, *Aminellus* Masi, *Tertalophidea* Howard, *Aschistus* Först, *Paraphaenodiscus* Girault, *Phaenodiscus* Förster, *Metaphaenodiscus,* Mercet, *Chalcaspis* Howard, *Choreia* Westwood, *Mayriella* Mercet.

12. *Habrolepis* — group of genera

Body metallic-coloured; mandibles tridentate, rarely bidentate; maxillary palpi with 4 and labial palpi with 3 segments; antennae longer in male than in female; in the latter club triarticulate; in male

club solid and funicle with verticillate hairs; wings in female spotted; vein *sm* curved in apical 0.33 of its length or with a triangular expansion; sexual dimorphism pronounced;

Masia Mercet, *Chiloneurinus* Mercet, *Prochiloneurus* Silvestri, *Chiloneurus* Westwood, *Liothorax* Mayr, *Tyndarichus* Howard, *Tyndarichoides* Mercet, *Cerapterocerus* Westwood, *Comperiella* Howard, *Habrolepis* Dalman, *Eusemion* Dahlbon.

Nikolskaya totally rejected the schemes of Ashmead and Mercet, but proposed two subfamilies Tetracneminae and Encyrtinae, respectively with six and twenty-one tribes. This scheme was substantially followed by Krombein in the Catalogue of North American Hymenoptera, but unfortunately it leaves out a very large number of genera not placed in their proper tribes.

Encyrtidae (as followed in Krombein)

Subfamily : 1 Tetracneminae

Tribe 1. ANAGYRINI — Anagyrus, Anathrix, Anusia, Apoanagyrus, Leptomastidea, Leptomastix, Paranusia, Parastenoterys, Pseudleptomastix, Rhopus.

Tribe 2. CHRYSOPLATYCERINI — Chrysoplatycerus

Tribe 3. ERICYDNINI — Clauesnia

Tribe 4. PAURIDIINI — Pauridia

Tribe 5. RHINOENCYRTINI — Rhinoencyrtus, Aenasius, Chalcaspis

Tribe 6. TETRACNEMINI — Calocerinus, Arhopoideus, Tetracnemus, Anarhopus, Cirrhencyrtus, Ectromatopsis, Neodusmetia, Paraleurocerus, Tetracnemopsis

Subfamily : 2. Encyrtinae

Tribe 1. APHYCINI — Acerophagus, Aenasioidea, Aphycus, Blastothrix, Bothriocraera, Erythraphycus, Melanaphycus, Metaphycus, Pseudaphycus, Stemmatosteres, Tachardiobius Timberlakia

Tribe 2. ARRHENOPHAGININI — Arrhenophagus

Tribe 3. BOTHRIOTHORACINI — Bothriothorax, Trjpitzinellus Zeteticontus

Tribe 4. CERAPTEROCERINI — Ammonoencyrtus, Anicetus, Cerapterocerus, Eusemion

Tribe 5. CHALCERINYINI—Echthrogonatopus, Helegonatopus

Tribe 6. CHEILONEURINI — Apterencyrtus, Boucekiella, Cheiloneurus, Chrysopophagus, Diversinervuss, Parasyrpophagus, Prochiloneurus, Trineophoctonus, Tyndarichus

Tribe 7 COMPERGINI — Compera

Tribe 8. COPIDOSOMATINI — Ageniaspis, Coelopencyrtus, Copidosoma, Parablastothrix, Paralitomastix, Pentaliomastix, Pentacnemus

Tribe 9. DISCODINI — Discodes

Tribe 10. ENCYRTINI — Encyrtus

Tribe 11. HABROLEPIDINI — Adelencyrtus, Anabrolepis, Coccidencyrtus, Comperiellia, Habrolepis, Neococcidencyrtus, Plagiomerus, Pseudhomalopoda

Tribe 12. HOMALOTYLINI — Anisotylus, Homalotylus, Isodromus

Tribe 13. IXODIPHAGINI — Hunterellus, Ixodiphagus

Tribe 14. MICROTERYNI — Agromyzaphagus, Aphidencyrtus, Avetianella, Cerchysius, Microterys, Oobius, Ooencyrtus, Platencyrtus, Pseudencyrtus, Pseudencyrtoides, Syrphophagus, Techinaephagus, Trichomasthus

Tribe 15. MIRAINI — Baeocharis, Mayridia, Mira

Tribe 16. NEOCLADINI — Carabunia, Zarhopalus

Tribe 17 PRIONOMASTICINI — Hexacladia

Tribe 18. PSEUDORHOPINI — Pseudorhopus

Tribe 19. PSILOPHRYDINI — Psilophrys

Tribe 20. THOMSONISCINI — Quaylea

Tribe 21. TRECHNITINI — Prionomitus, Psyllaephagus, Trechnites

Genera Incertae Sedis

Atropates, Aphycoideus, Blepyrus, Cerapteroceroidus, Chestomorpha, Epaenasomyia, Forcipestricis, Gahaniella, Hexacnemus, Caenocercus, Epicerchrysius, Formicencyrtus, Epanusia, Epiencyrtus, Euryrhopalus, Habrolepopteryx, Habrolepoidea, Hambletonia,

Hemaenusius, Holcencyrtus, Henicopygus, Meromyzobia, Nebaeocharis, Paraphaenodiscus, Parapsilophrys, Pentelicus, Pheidoloxenus, Psilophryoidea, Rhytidothorax, Tetralophiellus, Tetralophidea, Thyranomastix, Zammoencyrtus.

In 1955 Hoffer divided the family into a series of well defined tribes.

Encyrtinae

Tribe Anagyrini Hoffer 1953

Genera : *Xanthoectroma* Mercet, *Paraenasioidea* Hoffer, *Leptomastidea* Mercet, *Callipteroma* Motschulsly, *Leptomastix* Först., *Anagyrus* Howard, *Gyranusa* Mercet, *Thomsonisca* Ghesquiere, *Doliphoceras* Mercet, *Rhopus* Först., *Anusia* Först., *Xanthoencyrtus* Ashmead, *Clausenia* Ishii, *Heteranthrellus* How. (?)

Subtribe Anagyrii Hoffer

Antennae not strongly flattened and expanded in female. All genera of Anagyrini except *Anusia* Först.

Subtribe Anusii Hoffer

Antennae in female strongly flattened and expanded; male unknown. Genus *Ansula* Först.

Tribe Quadrencyrtini Hoffer 1953

Genus *Quadencyrtus* Hoffer

Tribe Ectromini Ashmead 1900

(Dinocarsini Hoffer 1954).

Genera : *Dinocarsis* Först., *Dicarnosis* Mercet. *Dinocarsiella* Mercet, *Ectroma* Westw., *Dusmetia* Mercet, *Aguaencyrtus* Hoffer.

Subtribe Ectromii Hoffer (Dinocarsii Hoffer)

Genera : *Dinocarsis* Först., *Dicarnosis* Mercet, *Dinocarsiella* Mercet, *Ectroma* Westw.

Subtribe Dusmetii Hoffer 1954

Dusmetia Mercet amd *Aquaencyrtus* Hoffer

Tribe Prionomasticini Hoffer 1955

Body generally long; generally finely shagreened, with coarse scattered punctae on head, non-metallic. Head short, wide; frons very wide; scape in female cylindrical, pedicel short, funicle with 6 flattened segments; club without distinct segments; mandibles

boradly trunctate apically; fore wings in female without fringe, infumate apically; in male with short fringe; vein *m* punctiform; *pm* very long; hind tibiae and tarsi flattened; abdomen triangular, strongly constricted laterally; ovipositor exserted from beneath the fifth sternite.

Genus *Prionomastix* Mayr.

Tribe Ericydnini Hoffer 1955

Body generally long; non-metalic or with a faint metallic tinge; finely shagreened, with scattered coarse punctae on head and rarely on thorax; head transversely subquadrate; frons very wide; antennae with 6 elongate, flattened, subquadrate, funicular segments; club with 3 segments; mandibles bidentate; scutellum apically with a hyaline membrane; wings hyaline or more or less infumate along the front margin; vein *m* always long; *st* subequal to *m; pm* long; wings sometimes reduced; hind tibiae and tarsi expanded; adbomen triangular, pointed in female, shorter in male; than in female; ovipositor rarely exserted.

Genus *Ericydnus* Walker Prasitic on Psudococcids and Leacanids.

Tribe Mirini* Ashmead

Body long; mostly metallic coloured, generally shagreened; sexes strongly dimorphic; head transversely ovate; often with scattered fine punctae; antennae with 6, sometimes only 5 funicular segments, generally long or sometimes flattened and expanded; in male with lateral rami; mandibles with 2 or 3 teeth; thorax flat, parapsidal furrows well developed; wings narrow, hyaline or with 2 transverse infuscate bands, one medial and another apical; vein *m* always longer than thick; sometimes wings reduced; elongate; abdomen elongate, flat, pointed apically; ovipositor long.

Subtribes with bidentate mandibles :

Ceballosii Hoffer 1955. Antennae in both sexes normal; wings hyaline, veins short; ovipositor exserted. Genus : *Ceballosia* Mercet.

Lykii Hoffer 1955. Antennae in female normal, very long; in male flattened, funicular segments unilaterally expanded; wings hyaline, veins long. *Lyka* Mercet.

Tricladii Hoffer 1955. Antennae in female with long segments, club unsegmented; in male with lateral rami on segments 1-3; wings hyaline in female, with vein *m* short; ovipositor exserted, Genus *Tricladia* Mercet.

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* Preoccupied in Heteroptera.

Tetracnemii Howard 1892. Antennae with 5 funicular segments in both sexes, in male with long lateral rami on segments 1-4; wings hyaline, *pm* reduced; abdomen constricited laterally in female; ovipositor hidden. Genera : *Tetracnemus* W stw. and *Hungariella* Erdös.

Tetracladii Hoffer 1955 (Masiini Hoffer 1953). Antennae in female strongly flattened, expanded in male, with lateral rami on segments 2-5 funicular segments; parapsidal furrows absent; fore wings with 1-2 dark transverse bands, sometimes rudimentary; vein *st* short, straight; abdomen triangular or elongate, ovipositor esxerted, long. Genera : *Tetracladia* Howard, *Anusiella* Mercet, *Calocerinus* Girault and *Tetralophidea* Mercet.

Subtribes with tridentate mandibles :

Charitopinii Hoffer 1955 (Masini Hoffer 1953 *partim*). Body flat; head strongly transverse; antennae in female slender, elongate; in male as in Tetracladii; mandibles with 2 teeth and one truncation; parapsidal furrows divergent; wings faintly yellow without dark bands; vein *st* well developed; abdomen with sides parallel; ovipositor hidden. Genus *Charitopus* Först.

Boucekiellii Hoffer 1955. Body flat; antennae in female short, club unsegmented; mandibles with 2 teeth and 1 knob; frons wide; eyes small; wings narrow, vein *m* subquadrate, infumate bands faint; ovipositor long; male unknown. Genus *Boucekiella* Hoffer

Echthrplexiellii Hoffer 1954. Genera: *Echthroplexiella* Mercet, *Baeocharis* Mayr, *Metanotalia* Mercet, *Metallon* Walker

Mirii. Related to Echthroplexiellii, but differing in the large, strongly flattened and expanded antennae in female and unilaterally expanded funicular segments in male; pronotum triangularly indented behind; abdomen short; ovipositor not exserted. *Mira* Sichel.

Mayridii Hoffer 1955 (Incertae sedis). Wings as in Tetracladii infumate; vein *m* short; antennae in female short; in male first funicular segment long; abdomen shorter than thorax; ovipositor never exserted; related to Microteryni. Genera : *Mayridia* Mercet, *Hoplopsis* Hincks and *Parasyrpophagus* Gir.

Tribe Encyrtini Ashmead 1900

Body generally coriaceous or rugulose, non-metallic coloured; head wide; scape cylindrical; funicle with 6 segments, in female somewhat flattened apically; club with 3 segments, truncate apically; in male segments cylindrical; mandibles broad, pointed, without inner teeth; scutellum in female with a tuft of hairs subapically; fore wings in female infumate apically and also with subtriangular dark spots near base of vein *m*; male often with hyaline wings; vein *m*

punctiform, veins *st* and *pm* long; legs stout, middle and hind legs flattened; abdomen ovate; ovipositor hidden. Generally parasitic in coccids, especially Lecaniidae.

Genus : *Encyrtus* Latr

Tribe Cheiloneurini Hoffer 1955

Body more slender than in Encyrtini; generally shagreened, with scattered shallow punctae on head; generally yellow-brown or also metallic-blue; sexes highly dimorphic; head large, hemisperical, frons more or less angularly separated from face; eyes large, highly convex; antennae in female with slightly expanded scape, long pedicel, 6 funicular segments more or less expanded towards tip of antennae; club with 3 segments, sometimes broadly truncate; in male long, slender, with long hairs; mandibles tridentate; scutum with stiff, long dense villous bristles; scutellum convex, in female often with a subapical tuft of hairs; fore wings in female rarely hyaline, narrow, with a large dark expanded spot in the apical 0.50, smaller triangular spot at tip of vein *sm*; in male hyaline; vein *m* usually very long, rarely short, veins *pm* and *st* short; very exceptionally wings rudimentary; legs long; middle and hind legs somewhat flattened; abdomen elongate; ovipositor exserted; parasites of coccids.

Genera : *Apterencyrtus* Ashmead, *Achrysopophagus* Girault, *Cheiloneurus* Westw., *Lepidoneurus* Hoffer, *Procheiloneurus* Silvestri, *Matacheiloneurus* Hoffer, *Tineophoctonus* Ashmead, *Mayrencyrtus* Hinks (?) and *Protyndarichus* Mercet.

Tribe Aphycini Hoffer 1954

Genera : *Aphycus* Mayr, *Metaphycus* Mercet, *Waterstonia* Mercet, *Aenasioidea* Girault, *Paraphycus* Girault, *Pseudaphycus* Claus., *Pezaphycus* Hoffer, *Timberlakia* Mercet, *Aphyculus* Hoffer, *Stèmmatosteres* Timberlake, *Pseudorhopus* Timberlake (?).

Subtribe Aphycii Hoffer 1955. Antennae normal, with 6 funicular segment; club with 3 segments. *Aphycus* Mayr, *Metaphycys* Mercet, *Waterstonia* Mercet, *Aenasioidea* Girault, *Pezaphycus* Hoffer.

Subtribe Pseudaphycii Hoffer 1955. Funicle with 5 segments club with 3 segments. Genus *Pseudaphycus* Claus.

Subtribe Stemmatosterii Hoffer 1955. Funicle with 5 and club with 2 segments. Genera : *Timberlakia* Mercet, *Aphyculus Stemmatosteres* Timberlake.

Subtribe Paraphycii Hoffer 1955. Aantennal segments subequal quadrate, without differentiation of club; flagellum with 9 segmentss. Genus *Paraphycus* Girault.

Subtribe Pseudorhopii Hoffer (incertae sedis) 1955. Funicle with 5 in female and 6 in male; club undivided in both sexes; vein *sm* short, veins *m, pm,* and *st* greatly reduced; middle metatarsus short. Genus *Pseudorhopus* Timberlake.

Tribe Homalotylini Hoffer 1954

Body coriaceously sculptured, sometimes with scattered punctae on head; non-metallic or metallic coloured; sex dimorphism slight; head subquadrate, transverse; scape cylindrical or foliaceously expanded, pedicel short, funicular segments 6, subquadrate, rarely elongated, in female club undivided, often light coloured and pointed at tip; mandibles strong, tridentate; fore wings with short fringe, with paired infumate spots in the middle; vein *m* punctiform; veins *pm* and *st* not very long; legs strong; middle and hind legs somewhat flat; pygostyli shifted only a little forward; ovipositor hidden or exserted; parasitic on coccids or Coccinellid, Chrysomelidae, Chrysopidae.

Genera *Homalotylus* Mayr, *Echthroplexis* Först., *Isodromus* Howard, *Eupoecilopoda* Hoffer, *Psilophrys* Mayr, *Homalotyloidea* Mercet and *Acridencyrtus* Subba Rao.

Tribe Microteryni Hoffer 1955

Largest tribe; body modertately elongate or even short; shagreened or with scattered punctae; metallic or sometimes also non-metallic coloured; head moderately elongate or short; either short in front or rounded, often transversely subquadrate; mandibles tridentate; wings with vein *m* punctiform or elongate but never very long; *pm* usually short; sometimes infumate spots; legs long; abdomen triangularly ended; ovipositor never very long; parasites of coccids, aphids, psyllids, Lepidoptera, Coleoptera, Diptera and Ixodiae (Ticks).

Subtribe Metaprionomiti Hoffer 1955. Head not too short, hemipherical or subquadrate; antennae in female rather long; vein *m* usually punctiform. Genera ; *Ooencyrtus* Ashmead, *Schedius Schedioides* Mercet, *Hazmburkia* Hoffer, *Coccidencyrtus* Ashmead, *Neococcidencyrtus* Compere, *Prionomitus* Mayr, *Subprionomitus* Mercet (?), *Metaprionomitus* Mercet, *Superprionomitus* Mercet (?), *Psyllaephagus* Ashmead, *Psyllaedontus* Crawf., *Blastothrix* Mayr (?).

Subtribe Microteryii Hoffer 1955. Head usually short, strongly rounded in front; antennae short, stout; vein *m* elongate. Genera : *Microterys* Thoms., *Trichomasthus* Thoms. *Aphidencyrtuss* Ashmead, *Paraphaenodiscoides* Mercet, *Paraschexlius* Hoffer, *Syrpophagus* Ashmead, *Epiencyrtus* Ashmead, *Tyndarichus* Howard.

Subtribe Ixodiphagii Howard 1908. *Hunterellus* Howard *Ixodiphagus* Howard.

Subtribe Pentacnemii Hoffer 1955. Antennae in female with moderately elongate segments, club stout, broadly truncate; in male with lateral rami on funicular segments 1-4 or 1-5; last funicular segment and club short; frons wide; vein *m* punctiform. *Parablastothrix* Mayr, *Calometopia* Mercet, *Pentacnemus* Howard.

Subtribe Adelencyrtii Hoffer 1955. First 4 funicular segments very short; club stout; mandibles with 4 teeth; wings very narrow, with vein *m* punctiform. Genus *Adelencyrtus* Asmead.

Tribe Discodini Hoffer 1954

Medium-sized or large, dorsally more or less flat, rarely strongly convex; shagreened or with coarse punctae on head and sometimes also on thorax; generally non-metallic coloured; head short, broad, frons wide; antennae usually short, rarely long, scape sometimes flattened; club short, usually with 3 segments in female and males; mandibles with 2 or 3 teeth; fore wings in females broad, more or less infumate; vein *m* usually longer than thick; wings often strongly reduced; abdomen short, triangularly pointed.

Genera : *Eugahania* Mecret, *Monodiscodes* Hoffer, *Choreia* Westw., *Semen* Hoffer, *Metaphaenodiscus* Mercet, *Paraphaenodiscus* Girault, *Coenocercus* Thoms.(?), *Rhinoencyrtus* Mercet, *Aminellus* Masi.

Subtribe Discodii. Vein *m* well developed; head and antennae normal; all genera listed above except *Rhinoencyrtus* and *Aminellus.*

Subtribe Rhinoencyrtii Hoffer. Mandibles with 2 teeth; vein *st* connected directly with *sm* before it touches front margin; antennae in female elongate, funicular segments quadrate, males slender, with erect hairs; head below face running out in projecting tubercle, *Rhinoencyrtus* Mecrcet, *Eladiscodes* Subbarao.

Subtribe Aminellii Hoffer 1955. Body strongly convex; antennae in female with quadrate funicular segments expanding towards antennal tip; club truncate; in male flattened, club with 3 segments; mandibles with 2 teeth and one knob; scutellum with hair tuft; wings broad; vein *m* punctiform.

Aminellus Masi

Tribe Bothriothoracini Howard 1895

Body medium to very large-sized dorsally flat; punctation coarse on head and thorax; usually metallic-green coloured; head short, transverse; funicle with 6 segments, long, often modertately flattened, expanding towards the tip; wings narrow, hyaline; vein *m* punctiform; parasitic in Diptera, Coleoptera and Homoptera.

Genera: *Bothriothorax* Ratzb. *Eucantabria* Mecret, *Agromyzaephagus* Gahan, *Zeteticonus* Silvestri, *Euzkadiella* Mecret *Moraviella* Hoffer, *Sceptrophorus* Först., and *Coccidoxenus* Crawf.

Tribe Cerapterocerini Hoffer 1955

Moderately elongate body, shagreenedl, often also with coarse punctae on head; generally dark metallic coloured; head transversely subquadrate; frons angularly separated from face; funicle in female with 6 segments, strongly flattened and expanded; in male slender, elongate, with long hairs; mandibles with 2-3 teeth; wings narrow; vein *m* distinctly longer than thick; *pm* absent; *st* very short; sometimes infumate uniformly or interruptedly in radial bands; in male hyaline; abdomen not long, pointed; parasites of coccids or hyperparasite.

Genera: *Eusemion* Dahlb., *Anicetus* Howard, *Pareusemion* Ishii *Cerapterocerus* Westw., *Compereiella* Howard.

Subtribe Eusemionii Hoffer 1955. Antennae in female with lamellar expansions on scape; funicle short; club stout; wings uniformly infumate (not in radial bands.). *Eusemion* Dahlb., *Anicetus* Howard, *Pareusemion* Ishii

Subtribe Cerapterocerii 'Antennae in female strongly flattened, lamellarly expanded; infumation of fore wings radially interrupted. *Cerapterocerus* Westw., *Comperiella* How'

Tribe Habrolepini Hoffer 1955

Related to Cerapterocerini, but head and thorax sometimes with peculiar squamae; antennae in female usual; in male with 2 annelli and stout club longer than the rest of the segments; body intense metallic-green or blue; sexes strongly dimorphic.

Habrolepis Först., and *Anabrolepis* Timberlake.

Tribe Copidosomini Hoffer 1955

Body always metallic-green black; sexes faintly differentiated; generally medium-sized but in *Copidosoma* strongly elongate; strongly convex; head most often subquadrate, more or less transverse; antennae usually long, funicular segments expanded only strightly towards antennal tip; club often undivided; thorax strongly convex; wings long, hyaline; vein *m* punctiform; sometimes vein st directly on *sm* before its meeting the front margin; legs slender, long; abdomen variously long, pointed; ovipositor often exserted; sculpture shagreened to punctate; mostly parasitic in Lepidoptera.

Litomastix Thoms., *Paralitomastix* Mecret, *Sectiliclava* Hoffer, *Copidosoma* Ratzeb., *Verdunia* Mecret, *Cerchysius* Westw., *Pentalitomastix* Eady.

Tribe AGENISAPIDINI Hoffer 1955

Body subelongate, strongly convex; velvety-back, with metallic-green or blue reflections; legs black with yellow; head transverse, subquadrate, frons wide; mandibles with 3 teeth; funicle with 5-6 segments; thorax with longitudinally grooved sculpture; wings hyaline; vein *m* punctiform.

General : *Ageniaspis* Dahlb., *Holcothorax* Mayr, *Eustrius* Hoffer *Geniaspidius* Masi, and *Parageniaspis* Masi (?)

Tribe TRECHNITINI Hoffer 1955

Subelongate; shagreened, sometimes with scattered punctae; metallic coloured; head transverse; funicle with 5 and club with 3 segments; mandibles with 4 teeth; thorax convex; wings large, hyaline; vein *m* punctiform; *st* relatively short; *pm* absent; legs long; abdomen triangular; parasitic on coccids and psyllids.

Trechnites Thoms.

Tribe CERCOBELINI Hoffer 1953

Cercobelus Walker, *Plagiomerus* Crawf.

Subfamily ARRHENOPHAGINAE Mercet 1921

Subfamily ANTHEMINAE Mercet 1922

Hoffer, A. 1955. Fylogenese a taxonomie celedi Encyrtidae (Hym., Chalcidoidea). Sbn. narod. Mus. Prazae, 11 (B)(1) : 11 gives the following survey of the family :

Encyrtinae Howard 1886

Tribe ANOMALICORNINI Hoffer

Body generally elongate, somewhat flattened, shagreened or smooth; non-metallic coloured; frons wide; antennae with short scape and pedicel; funicular segments 7, elongate; club with 2 segments; mandibles bidentate or with one acute tooth and a truncation; wings hyaline, vein *sm* short, other veins short or obscure; speculum absent or faint; sometimes wings rudimentary; legs slender; abdomen ovate; pygostyli far anterior; ovipositor hidden or well exserted.

Genera : *Anomalicornia* Mercet, *Heterencyrtus* Hoffer (parasites of Coccids).

Tribe Dinocarsiini Hoffer

To this tribe belong genera with the following characters : Mandibles bidentate body non-metallic; both sexes almost similar except for the antennae, which are only in the more primitive forms (*Dinocarsis* Förster) of a similar shape, but show in the more differentiated forms a distinct dimorphism. Head broad, only very moderately arched, transverse from above, more or less straight in front; frons broad, rarely narrow. Ocelli very far from the inner orbits; scape always more or less flattened, very often enlarged on the inner side; pedicel in female either very short (subtribe *Dinocarsii'* or longer than the following segment (subtribe *Dusmetii*); funicular segments in females as a rule longer than wide; exceptionally at least the first funicular segment lengthened; in males funicular segments always longer. Pronotum well developed mostly broad, either parallel or abruptly convergent anteriorly, but as a rule not long; mesoscutum relatively short. Wings always with infuscate parts forming patternss from the entirely smoky surface of the disc separate in the distal part of the wing transversal zones; either in the direction towards the base of the wing, these zones multiply in the course of the further disintegration of the dark surface, or a tendency manifests itself to a longitudinal disintegration of the distal zones into a row of spots, beginning with a shallow identation *(Dinocarsis)* and ending with spots arranged in a zone (*Dicarnosis).* A very strong tendency towards a reduction of the wing can be seen in all genera of this group. Vein *m* mostly long, but never thinner than other veins.

Very ancient, specified branch of the Encyrtidae with bidentate mandibles, with well defined species, and with a high generic coefficient; specifically little numerous. It corresponds roughly to Mercet's group 3 of the genus *Ectroma* Westwood; the genus *Ericydnus* Walker, has however a different character and forms a separate group. Type of the Tribe : Genus *Dinocarsis* Förster The tribe is divided into 2 natural well characterised subtribes.

Subtribe Dinocarsii

Pedicel in females always shorter than first funicular segment : scape strongly flattened, on the inner side usually enlarged leaf-like; maxillarys palpi with it labial palpi 3 segments; pronotum parallel, not converging anteriorly; scutellum laye, forming *an* equilateral triangle, acute aprcally; metatarsus normally long; 2 tergites preceding the last in the middle part posteriorly more or less running out, so that the last tergite does not form by itself the large triangular surface; abdomen acuter pointed or with an only moderately rounded end.

Type of the subtribe. *Dinocarsis* Förster.

Included genera : *Dinocarsis* Förster, *Dicarnosis* Mercet, *Dinocarsiella* Mercet, and *Ectroma* Westwood.

Pedicel in females always longer than first funicular segment; scape only moderately flattened; maxillary palpi with 3, labial palpi 2 segments; pronotum anteriorly converging; scutellum short, posteriorly broadly rounded or truncate; metatarsus strongly shortened. Middle tergites strongly depressed, very narrow and parallel, often hidden by the posterior margin of the first tergite; last tergite strongly developed triangular, so that abdomen appears to be composed on the dorsal side of only 2 tergites; end broadly rounded.

Type of subtribe : *Dusmetia* Mercet.

Included genera : *Dusmetia* Mercet and *Aquaencyrtus* Hoffer

KEY TO GENERA OF THE TRIBE DINOCARSIINI

1.	Scutellum triangular, acute behind; pedicel in females shorter than first funicular segment.	2
	Scutellum short, broadly rounded or truncate behind; pedicel in females longer than first funicular segment.	5
2.	Body black; antennae in both sexes very similar, uncoloured, with funicular segments longer than moderately shortening towards trip of thick antenna.	*Dinocarsis* Förster
	Body black of another colour, in the latter case funicular segments female transverse; in male very long, distantly hairy, considerably different from those of female	3
3.	General colour of body reddish-brown; scutellum in brachypterous form with 2 deep pits at base; ovipositor projects distinctly	*Ectroma* Westwood.
	Scutellum without deep pit at the base ovipositor not projecting.	4
4.	General colour of body blackish-blue; head and thorax with longitudinal broad yellow stripes; anterior wing with 4 dark transversal zones behind.	*Dinocarsiella* Mercet.
	General colour of body black, only a narrow border along the inner orbits yellow; in females antennae with white coloured parts, except the first segment, funicle transverse	*Dicarnosis* Mercet.
5.	Body black; eyes relatively small; scutellum broadly rounded; antennae in both sexes unicoloured, dark.	*Aquaencyrtus* Hoffer.
	Body reddish-brown; scutellum at base broadly truncate; antennae in females with white parts	*Dusmetia* Mercet.

Kerrich Followed a modified system of Compere and Annecke, but substituted the name Anagyrini for Ectromini and

Bothriothoracini for Mirini, under Anagyrini he recognized the subtribes Anagyrina, Ericydrina, Aenasiina, Linocarsiina and Aphycina.

We consider Ashmead's tribes as basically sound and follow his arrangement here, with slight modifications.

KEY TO SUBFAMILIES

1.	Tarsi with 5 segment; mandibles with 2-3 teeth or broadly truncate, never acutely pointed	ENCYRTINAE
	Tarsi with 4 segments.	2
2.	Mandibles acutely pointed, with a row of teeth; antennae with only 2 annelli form funicular segment; club large, solid; wings large, broad; vein *m* punctiform or almost obsolete; *pm* obsolete or nearly so.	ARRHENOPHAGINAE
	Mandibles denticulate and with a truncature; antennae with 5-6 well differentiated funicular segments; wings long and narrow, with long fringe, veins short but distinct	ANTHEMINAE

SUBFAMILY ENCYRTINAE

KEY TO TRIBES

1.	Mandibles truncate apically.	ENCYTRINI
	Mandibles dentate apically.	2
2.	Mandibles usually bidentate; sometimes acutely tridentate; never with 2 teeth and a broad truncature; hypopygium ploughshare — shoped enclosing ovipositor.	ECTROMINI(= *Anagyrini)*
	Mandibles usually tridentate; often with 2 teeth and a truncature; never only bidentate; bypopygium generally not enclosing ovipositor	MIRAINI (= *Bothriothoracini)*

ARTIFICIAL KEY TO GENERA

1.	Females.	2
	Males.	113
2.	Wings rudimentary or very short and reduced	3
	Wings normally developed.	18
3.	Scutellum truncate apically, mandibles bidentate.	4
	Scutellum triangular apically.	5
4.	Antennae inserted close to the mouth border	*Neodusmetia* Kerrich
	Antennae inserted on level of lower orbital border; body bright red, with dense white hairs	*Dusmetia* Mercet
5.	Mandibles bidentate; scutellum with 2 pits basally; terminal antennae segment white	*Ectroma* Westwood
	Mandibles bidentate or tridentate; scutellum without 2 pits basally	6

6.	Antennae strongly compressed; or expanded foliaceously	7
	Funicle and club not compressed; scape expanded or cylindrical.	8
7.	First funicular segment much shorter than pedicel; other funicular segments nearly as long as thick apically; mandible bidentate	*Anusia* Förster
	First funicular segment much longer than pedicel; other funicular segments thicker apically; mandibles tridentate.	*Mira* Schellen
8.	Mandibles bidentate.	9
	Mandibles tridentate.	10
9.	Scape cylindrical or only slightly enlarged, head strongly convex, suglobose, with rows of large punctae and hairs; mesocutum longer than pronotum.	*Ericydnus* Walker
10.	Adbomen strongly compressed; ovipositor exserted	*Copidosoma* Ratz. *Pentalitomastix Eady*
	Abdomen normal, more or less ovate or triangular; ovipositor concealed or exserted	11
11.	Ovipositor well exserted	12
	Ovipositor concealed or only slightly exserted	14
12.	Antennae short; body generally yellow or with yellow in part	13
	Antennae long; body metallic coloured	*Copidosoma* Ratz.
13.	First 3 funicular segments very short, combined length hardly equal to pedicel; club solid	*Echthroplexiella* Mercet
14.	Funicle uniformly coloured; scape not expanded apically	15
	Funicular segments white or black; scape expanded apically	*Encyrtus* Dalman
15.	Head and thorax generally yellow or atleast yellow in part; wings rudimentary	16
	Body uniformly metallic-coloured; wings short but well developed	17
16.	First funicular segment very short; others moniliform; scape strongly truncated; frons longer than eye; thorax dark coloured; scutellum yellow	*Echthroplexiella* Mercet
17.	Fore wings with an infuscate band; frons as wide as or wider than eye	*Mayridia* Mercet
	Fore wings hyaline; frons much longer than eyes	*Protynadarichus* Mercet
18.	Funicular segments 7	*Alamella* Agarwal
	Funicular segments less than 7	19
19.	Funicular segments 4 or 5	20
	Funicular segments 6	24
20.	Funicle with 4 segments; mandibles with 4 teeth; scutellum with scales	*Plagiomerus* Crawford
	Funicle with 5 segments.	21

21.	Fore wing with vein *m* punctiform	22
	Fore wing with vein *m* distinctly longer than thick	*Pseudanasius* Hayat, Alam & Agarwal
22.	Fore wings with veins *m, pm* and *st* indistinct; middle metatarsus hardly equal to the terminal tarsal segment	*Rhopus* Förster
	Fore wings with veins *m* and *st* distinct; middle metatarsus longer than the last tarsal segment	23
23.	Mandibles with 4 teeth; body distinctly metallic-coloured; parapsidal furrows vestigial	*Trechnites* Thomson
	Mandibles tridentate; parapsidal furrows absent; body dull dark coloured	*Ageniaspis* Dahlbom
24.	Mandibles without teeth apically, but with minute tooth basally.	25
	Mandibles with 2, 3 or 4 teeth apically.	28
25.	Scutellum with a tuft of bristles apically	27
	Scutellum without tuft of bristles	26
26.	Head lenticular, with a protubenance between toruli; scutellum abundantly hairy at apex	*Aminellus* Masi
27.	Funicle and club cylindrical; scutellum densely hairy to form a tuft	*Aminellus* Masi
28.	Mandibles distinctly acutely bidentate apically or tridentate or with 1-2 denticle and wide truncature or with 4 teeth	47
	Mandibles distinctly bidentate apically.	29
29.	Ovipositor well exserted	30
	Ovipositor concealed or only slightly protruding	32
30.	Maxillary palpi with 3 and labial palpi with 2 segments; wings almost hyaline; vein *m* very short; funicular segments longer than thick	*Tricnemus* Mercet
	Maxillary palpi with 4 and labial palpi with 3 segments	31
31.	Fore wings with transverse infuscate bands; vein *m* longer than *pm*	*Masia* Mercet
	Fore wings hyaline, with faint infuscation; apically	*Carabunia* Waterston
32.	Fore wings completely or partly infuscate and partly hyaline or hyaline with some infuscation	33
	Fore wings hyaline or hearly so; rarely with a slight coloration near front and hind margin	40
33.	Wings at rest held vertically; largely hyaline with some discolouration or hyaline and with 4-5 transverse bands	34
	Wing at rest held horizontally; hyaline, with 1-2 obscure transverse bands or infuscate with 1-2 transverse hyaline bands or completely dark	35

34. Scape cylindrical; rarely only slightly compressed; face smooth between toruli; thorax glabrous; wings strongly coloured, with numerous rounded hyaline spots — *Callipteroma* Motschulsky

35. Maxillary palpi with 3 and labial palpi with 2 segments; costal cell in fore wing narrow or almost obliterated; vein *pm* much longer than *m*; fore wings hyaline with 1-2 transverse hands — *Leptomastidea* Mercet

Maxillary palpi with 4 and labial palpi with 3 segments — 36

36. Scape cylindrical or only slightly expanded and compressed; head and thorax more or less shiny, clothed with scaly hairs — 37

Scape expanded more or less laminately; head and thorax dull, clothed with dense white hairs — 38

37. Wings hyaline, with a dark spot in the middle; vein *pm* and *st* equal; parapsidal furrows absent; body metallic-coloured — *Tetralophidea* Ashmead

Wings infuscate; dark in the middle — *Proleuroceroides* Shafee, Alam & Agar.

38. Vein *pm* subequal to *st* — *Lepthanusia* De Osantis

Vein *pm* shorter than *st*. — 39

39. Axillae contiguous — *Praleurocerus* Agarwal

Axillae distinctly separated — *Neoplatycerus* Subba Rao

40. Scape cylindrical or only slightly compressed apically .. — 41

Scape more or less laminately expanded — 45

41. Head smooth, or only finely shagreened, but not with large setigerous punctate — 42

Head densely and coarsely punctae; veins *m* *pm* and *st* subequal — *Ericydnus* Walker

42. Antennae filiform, equal to or longer than body — 43

Antennae stout, shorter than body — 44

43. Veins *pm* and *st* subequal to *m* — *Leptomastix* Förster

Veins *pm* and *st* much shorter than *m* — *Pseudoleptomatix*

44. Pedicel equal to the following segment; funicle cylindrical; club not much thicker than funicle; maxillary palpi with 3 and labial palpi with 2 segments — *Doliphocerus* Mercet

Pedicel shorter than the following segment; club distinctly thicker than funicle; maxillary palpi with 4 and labial palpi with 3 segments — *Neocharitopus* Hayat, Alam & Agar.

45. Funicle and club strongly compressed, expanded; face smooth and shiny — *Anusia* Förster

Funicular segments cylindrical; club slightly thicker than funicle; face shagreened or reticulately sqaumous — 46

46.	Fore wings hyaline with vein *sm* separated from the front margin, costal cell thus well developed;	*Anagyrus* Howard
	Fore wings with vein *sm* contiguous with front margin	*Gyranusoidea* Compere
47.	Mandibles with a single tooth apically, followed by a truncature	*Psyllaphycus* Hayat
	Mandibles tridentate apically or bidentate apically and with a broad truncature	48
48.	Scutellum with a hair tuft	49
	Scutellum without hair tuft	53
49.	Head finely shagreened; vein *m* relatively long, contiguous with front margin; hind wing with costal cell narrow or absent	50
	Head irregularly coarsely punctae; vein *m* punctiform, hind wing with costal cell wide	*Aminellus* Masi
50.	Vein *sm* strongly curved in the apical 0.33; wing more or less darkened; first funicular segment longer than thick	52
	Vein *sm* straight or only slightly curved; wing hyaline	51
51.	Funicular segments longer than thick	*Chiloneurinus* Mercet
	Funicular segments transverse	*Apterencyrtus* Ashmead
52.	Frontovertex angularly separated from face	*Chilonicetus* Shafee, Alam & Agarwal
	Frontovertex not angularly separated from face	*Cheiloneurus* Westwood
53.	Scape expanded foliaceously the whole length; funicular segments strongly expanded; club stouter than funicle; wing dark or with radiate markings	54
	Scape at the most only slightly expanded below; wings hyaline or with dark bands; rarely radially distributed markings	57
54.	Antennae compressed foliaceously; wing with radial spots	56
	Funicular segments not compressed	55
55.	Axillae contiguous	*Eusemion* Dahlbom
	Axillae separate	*Aenasius* Walker
56.	Mesoscutum and scutellum convex; scutellum triangular; vein *m* long, *st* short, *sm* with a triangular projection in its apical 0.33	*Cerapterocerus* Westwood
	Mesoscutum and scutellum flat; scutellum wider and strongly rounded behind; vein *m* much shorter than *st*, which latter is at right angles to the front margin; vein *sm* simply swollen apically	*Comperiella* Howard
57.	Vein *sm* with a triangular projection in its apical 0.33	58
	Vein *sm* simply thickened	59

58. Funicular segments longer than thick; variously coloured; club obliquely truncate apically; scape expanded apically; wing wholly hyaline — *Tyndarichus* Howard

Funicular segments as long as thick or a little thicker, uniformly coloured; club elongate; wings faintly darkened in the apical 0.33 — *Protyndarichus* Mercet

59. Vertex and frons horizontal, face strongly inclined to form on acute angle with frons; vertex and apex of scutellum sometimes with a pair of scaly processes — *Epitetracnemus* Girault

Vertex and frons convex, gently curved to frons; wing hyaline or darkened or with transverse bands — 60

60. Ovipositor hidden or only slightly exserted — 70

Ovipositor well exserted, long — 61

61. Veins *m, pm* and *st* subequal — *Adelencyrtus* Ashmead

Veins *m, pm* and *st* not equal. — 62

62. Vein *m* punctiform — 65

Vein *m* not punctiform — 63

63. Mandibles with one tooth and a broad truncature; vein *pm* shorter than *st* which latter is short — *Neoadelencyrtus* Hatat, Alam & Agarwal

Mandibles tridentate — 64

64. Vein *m* longer than *pm-st* continued; scutellum tuft absent — *Prochiloneuroides* Hayat, Alam & Agarwal

Vein *m* longer than thick; *st* very short; scutellar tuft present — *Prochiloneurus* Silvest.

65. Body largely yellow or yellowish-black — 66

Body dark metallic bluish-black — 68

66. Pedicel short — *Neoprochiloneurus* Vig.

Pedicel not short — 67

67. Pedicel equal to the following segment; funicular segments longer than thick — *Aenasioidea* Girault

Pedicel much longer than the following segment; first 4 funicular segments thicker than long — *Aphycus* Mayr.

68. Abdomen depressed; antennae very stout — 69

Abdomen compressed; antennae filiform — *Copidosoma* Ratz.

69. Club triarticulate — 70

Club solid; body dark blue — *Homalotylus* Mayr.

70. Vein *m* punctiform; costal cell of hind wing wide; ovipositor slender — *Caenocercus* Thomson

Vein *m* short but not punctiform; costal cell of hind wing almost absent; ovipositor stout — *Cerchysius* Westwood

71. Gena very short; thorax clothed with dense white hairs — *Parablastothrix* Mercet

Gena not very short — 72

72.	Vertex, frons and face coarsely deeply punctae; coastal cell in hind wing well developed	73
	Vertex, frons and face rarely with large, but sparse punctae; mostly shagreened or reticulate; costal cell in hind wing narrow or absent	78
73.	Vein *st* a continuation of *m*; wing generally dark or radially spotted; rarely hyaline	74
	Vein *st* a continuation of *sm*; wing hyaline or subhyaline	77
74.	Wing dark or radially spotted; vein *m* long	75
	Wing hyaline; vein *m* punctiform	76
75.	Scutellum flat; acute behind; wing completely dark, rarely a little hyaline near tip; antennae cylindrical	*Phaenodiscus* Förster
76.	Club thicker and truncate apically; mesoscutum shagreened; with some large, setigerous punctae	*Bothriothorax* Ratz.
	Club pointed	*Indoencyrtus* Hayat & Verma
77.	Mesoscutum and scutellum strongly convex, coarsely rugosely punctate; axillae separate	*Aminellus* Masi
	Scutellum reticulate; axillae contiguous	*Proleurocerus* Ferrière
78.	Parapsidal furrows absent	82
	Parapsidal furrows faintly indicated	79
79.	Head and thorax yellow or yellowish-red	80
	Head and thorax distinctly metallic-coloured	81
80.	Antennae short, stout apically; scape strongly expanded mesially; pedicel much longer than the following segment; funicular segments much longer than thick; club thicker than funicle	*Aphycus* Mayr.
81.	Vein *m* much thicker than long; *st* curved, equal to *m*; *pm* about 0.50 of *st;* antennae inserted near mouth border	*Diversicornia* Mercet
82.	Scutellum smooth, shiny; funicular segments transverse, slightly wider than long	*Tyndarichus* Howard
	Scutellum reticulate or shagreened, longitudinally straight; funicular segments variable	83
83.	Mandibles distinctly tridentate apically or with 2 well developed teeth and 1 truncature or with 4 denticles	87
	Mandibles indistinctly tridentate apically, or with a more or less acute denticle, followed by a wide truncature	84
84.	Mandibles edentate or minutely dentate apically, with a rudimentary external or central denticle; vein *m* punctiform; *st* longer than *pm*	*Prionomitus* Mayr
	Mandibles with one more or less acute denticle, followed by a broad truncature;	

wing with fringe; head shagreened; axillae contiguous or nearly so; without large punctae — 85

85. Vein *m* punctiform — 86

Vein *m* equal to *st*; scape expanded apically; thorax densely clothed with white setae — *Blastothrix* Mayr

86. Mesoscutum shagreened; scutellum flat or nearly flattened, shagreened; tegulae white or white basally and black apically; middle tibial spur shorter than metatarsus; body metallic-coloured — *Metaprionomitus* Mercet

Mesoscutum finely reticulately squamous; scutellum strongly convex, finely reticulately squamous; tegulae yellow or metallic; body metallic-coloured or partly also yellow — *Ooencyrtus* Ashmead

87. Mandibles with 4 teeth apically; first 4 funicular segments longer than thick; club not quite 0.33 of funicle — *Tachinaephagus* Ashmead

Mandibles distinctly tridentate apically or with 2 teeth and a wide truncature — 88

88. Vein *m* punctiform — 89

Vein *m* longer than thick — 99

89. Some funicular segments and club white or yellow; other segments black — 90

Antennae uniformly yellow or brown — 94

90. Body yellow, dark brown or black, without metallic reflections; club triarticulate — 91

Body metallic-coloured or black and partly metallic — 92

91. Funicular segments much longer than thick — *Aphycus* Mayr

Funicular segments thicker than long — *Aenasioidea* Girault

92. Club solid, obliquely truncate sometimes almost up to base; wings infuscate in the middle; legs long; scape cylindrical or only very slightly expanded; maxillary palpi with 4 and labial palpi with 3 segments — *Homalotylus* Mayr

Club triarticulate — 93

93. Club obliquely truncate; fore wings infuscate in the middle; legs long — *Mashhoodiella* Hayat

Club transversely truncate; wings hyaline; legs not exceptionally long — *Paralitomastix* Mercet

94. Wings infuscate behind vein *m* — 95

Wings hyaline — 96

95. Vein *pm* distinctly longer than *m* — *Homalotylus* Mayr

96. Club obliquely truncate; abdomen ovate or triangular; ovipositor concealed; vein *st* generally cuneiform — *Litomastix* Thomson

Club rounded apically, abdomen compressed — 97

97. Thorax closely punctate, sometimes finely shagreened — *Copidosoma* Ratzeburg

Thorax with shallow well separated punctae — *Neocladia* Perkins

98. Gena shorter than eye; club much thicker than funicle, obliquely truncate; scutellum

	matt, shagreened; scapula and tegulae partly white	*Parablastothrix* Mercet
	Gena equal to eye; club lanceolate, slightly longer than funicle; scutellum shiny, strongly reticulate; scapula and tegulae metallic-coloured	*Helegonatopus* Perkins
99.	Scape more or less laminately expanded	100
	Scape cylindrical or only slightly fusiform and a little compressed apically	103
100.	Wings hyaline	101
	Wings infuscate or banded	102
101.	Vein *pm* subequal to *st*; funicular segments transverse; club thicker than funicle, but equal to or longer than funicle; scapula metallic-coloured	*Epiencyrtus* Ashmead
	Vein *pm* subequal to *st*; funicular segments cylindrical, longer than thick; club shorter than funicle; scapula white or white spotted	*Blastothrix* Mayr
102.	Wings with transverse infuscate bands; funicular segments longer than thick; club slightly thicker and shorter than funicle	*Encyrtus* Dalman
	Wings infuscate basally and in front, otherwise hyaline	*Neodiscodes* Compere
103.	Fore wings banded or infuscate	104
	Fore wings hyaline	105
104.	Fore wings completely infuscate; antennae uniformly dark coloured	*Microterys* Thomson
	Fore wing hyaline and dark banded transversely; terminal funicular segments much paler than others	*Encyrtus* Dalman
105.	Club solid; mesoscutum and scutellum black	*Ageniaspis* Dahlb.
	Club triarticulate	106
107.	Pedicel equal to the first funicular segment	*Pseudomicroterys* Shafee, Alam & Agar.
	Pedicel unequal to first funicular segment	107
107.	Pedicel longer than first funicular segment	109
	Pedicel shorter than first funicular segment	108
108.	Club more or less truncate; vein *st* short, *m* longer than *st-pm* combined	*Subprionomitus* Mercet
	Club pointed	*Leiocyrtus* Erdös & Novicky
109.	Funicular segments transverse, thicker than long; club thicker than and equal to funicle	*Coccidencyrtus* Ashmead
	Not as described above	110
110.	Mandibles with 2 teeth and a wide truncature; first 3 funicular segments submoniliform; hind tibial spurs double	*Aphidencyrtus* Ashmead
	Mandibles acutely tridentate	111
111.	Antennae short; abdomen triangular, longer than head and thorax combined	*Parasyrpophagus* Girault
	Antennae long; abdomen not longer than head and thorax combined	112

112.	Head shagreened and with large punctae; vein *m* as long as or longer than *st*.	*Microterys* Thomson
	Head shagreened and without large punctae; vein *m* shorter than *st*	*Coccidencyrtus* Ashmead
113.	Antennae branched	114
	Antennae not branched	121
114.	Antennae with 4 lateral branches	115
	Antennae with 6 branches	*Neocladia* Perkin *Carabunia* Waterston
	Antennae with 3 lateral branches on the first 3 funicular segments; mandible bidentate; vein *pm* absent.	*Tricnemus* Mercet
115.	Funicle with 6 segments	116
	Funicle with 5 segments the first 4 with lateral branches; axillae separate	*Tetracnemus* Westwood
116.	First 4 funicular segments branched; vein *m* longer than thick	117
	Second, third, fourth and fifth funicular segments branched; vein *m* thicker than long	118
117.	Mandible bidentate; maxillary palpi with 3 and labial palpi with 2 segments; 4 branches short, shorter than the following segments	*Tricnemus* (Abnormal) Mercet
	Mandible tridentate; maxillary palpi with 4 and labial palpi with 3 segments; 4 branches as long as the following segments combined	*Parablastothrix* Mercet
118.	Parapsidal furrows absent; vein *m* longer than *st*	119
	Parapsidal furrows distinct; vein *m* shorter than *st*	*Diversicornia* Mercet
119.	Third funicular segment as long as or shorter than, or little longer than second segment; axillae contiguous	120
	Third funicular segment much longer than the second, head large lenticular, mesoscutum strongly convex, axillae separate	*Tetralophidea* Ashmead
120.	Vein *m* shorter than *pm-st* combined; third funicular segment distinctly longer than second	*Tetralophidea* Ashmead
	Vein *m* longer than *pm-st* combined; third funicular segment shorter than second	*Tetracladia* Howard
121.	Brachypterous, wings rudimentary or very short	122
	Wings well developed	127
122.	Mandibles bidentate	123
	Mandibles tridentate	125
123.	Mesoscutum short, equal to or shorter than pronotum; parapsidal furrows traces only; axillae separate; scutellum truncate or triangular with 2 pits at base	124
	Mesoscutum large, longer than pronotum; furrows absent; axillae contiguous;	

	scutellum triangular, membranous apically; frontovertex with a row of large punctae	*Ericydnus* Walker
124.	Scutellum triangular, with 2 pits at base; body shiny red, with violet reflections and slightly hairy	*Ectroma* Westwood
	Scutellum truncate apically; body dull bright-red, with dense white hairs	*Dusmetia* Mercet
125.	Funicle with short hairs	126
	Funicle with long verticillate hairs	*Echthroplexiella* Mercet
126.	Pronotum short, shorter than mesoscutum; antennae completely black; body metallic-coloured	*Copidosoma* Ratzeburg
127.	Funicle with 5, 6 or 7 segments	128
	Funicle with only 2 annelli-form segments; club very long	*Habrolepis* Förster
128.	Funicle with 7 segments; club biarticulate; vein *sm* longer than basal 0.30 of wing; speculum present; vein *m*, *pm* and *st* developed	*Thomsonisca* Mercet
	Funicle with 6 segments	129
129.	Mandible distinctly acutely bidentate	130
	Mandible acuminate, 3 or 4 dentate	141
130.	Wing horizontal at rest, hyaline or banded	131
	Wing vertical at rest, infumate, with hyaline spots; uniformly hairy	*Callipteroma* Motschulsky
131.	Wings hyaline	132
	Wings banded, costal cell absent; antennae with verticillate hairs	*Leptomastidea* Mercet
132.	Funicle with verticillate hairs	133
	Funicle uniformly hairy	138
133.	Terminal funicular and basal club segment with a row of sensoria, perpendicular to the antennae	134
	Terminal funicular segments and club normal	135
134.	Head and thorax slightly pubescent; eyes hairy; maxillary palpi with 3 and labial palpi with 2 segments; funicular segments cylindrical	*Doliphoceras* Mercet
135.	Body not metallic-coloured	136
	Body metallic-coloured; thorax glabrous; antennae very stout; terminal funicle segment ovoid	*Masia* Mercet
136.	Costal cell in fore wing well developed; speculum interrupted in the posterior 0.33; thorax sparsely hairy	137
	Costal cell elongate, practically absent; speculum resticted to the anterior 0.33; thorax densely hairy	*Gyranusa* Mercet
137.	Vein *pm* absent or almost absent; scape compressed or slightly expanded	*Anagyrus* Howard
	Vein *pm* equal to *st;* scape cylindrical	*Leptomastix* Förster

138.	Antennae filiform, longer than body; funicle hispid	139
	Antennae stout; funicle with short, flat hairs ..	140
139.	Thorax densely clothed with white hairs; scutellum flat, acutely pointed	*Gyranusa* Mercet
	Thorax sparsely pubescent; scutellum convex; rounded apically	*Leptomastix* Förster
140.	Head strongly convex, semiglobose; frontovertex with lines of large punctae; funicular segments close together; veins *m, pm* and *st* relatively long	*Ericydnus* Walker
	Head very wide; vertex and frons finely shagreened; funicular segments distinctly separated from each other; veins short	*Thomsonisca* Mercet
141.	Mandible acuminate, with 3 or 4 teeth, rarely truncate; scutellum without hair tuft	142
	Mandible wide, scutellum with hair tuft	*Eucomys* Förster
142.	Club triarticulate ..	143
	Club entire	148
143.	Scutellum shagreened, smooth; club oval, or lanceolate	144
	Scutellum umbilicately punctate, vein *m* punctiform; club obliquely truncate	*Bothriothorax* Ratzeburg
144.	Scutellum shagreened or punctately shagreened	145
	Scutellum smooth shiny, wing hyaline	*Tachinaephagus* Ashmead
145.	Scutellum more or less shiny	146
	Scutellum matt	147
146.	Funicle cylindrical, segments not well separated	*Phaenodiscus* Förster
147.	Club apparently triarticulate, in reality entire; funicle swollen apically, segments thicker than long	*Aphycus* Mayr
148.	Mandibles acuminate or truncate	149
	Mandibles tridentate or with 1 or 2 teeth and one truncature	150
149.	Mandibles broad truncate; face without a tubercle between antennal sockets; head without large punctae, antennae stout; vein *m* punctiform	*Prionomastix* Mayr
	Mandible acute; with 1 rudimentary tooth basally; with a tubercle between antennal sockets; antennae filiform, with verticillate hairs; vein *m* absent	*Rhinoencyrtus* Mercet
150.	Vein *sm* triangularly expanded in the apical 0.33	151
	Vein *sm* simply expanded in the apical 0.23	153
151.	Vein *m* longer than *st*	152
	Vein *m* shorter than *st*	*Tyndarichus* Howard
152.	Verticillate hairs on funicular segments as long as the segment; body bluish-green	*Cerapterocerus* Westw.
	Verticillate hairs on funicle shorter than the segments; body violet	*Liothorax* Mayr

153.	Vein *st* branching from *sm* before the latter touches the wing margin	154
	Vein *st* clearly from vein *m*	155
154.	Head largely deeply and umbilicately punctae; antennae very stout-fusiform; scutellum strongly convex	*Aminellus* Masi
	Head finely shagreened	*Aphycus* Mayr
155.	Parapsidal furrows distinct; head normal, large, highly convex, body yellow or yellowish or black	*Aphycus* Mayr
	Parapsidal furrows absent	156
156.	Vein *m* punctiform	157
	Vein *m* distinctly longer than thick	171
157.	Body yellow, red, blackish and black	158
	Body distinctly metallic rarely yellow, with abdomen and thorax in part strongly metallic	163
158.	Club variable; maxillary palpi with 3 or 4 segments labial palpi with 3 segments	159
	Club oval or lanceolate; maxillary and labial palpi biarticulate	*Aphycus* Mayr
159.	Pedicel much shorter than following funicular segments	160
	Pedicel longer than the following segments	161
160.	Body yellow; mesoscutum and scutellum flat; simply hairy	*Aphycus* Mayr
	Body black or violet-blackish; mesoscutum and scutellum with setigerous punctae	*Ageniaspis* Dahlbom
161.	Club strongly obliquely truncate; scutellum convex; posterolateral angles of propodeum tomentose	162
	Club lanceolate, rounded, or only slightly truncate, thorax densely clothed with white setae	*Aphycus* Mayr
162.	Vein *pm* distinctly longer than *m*; thorax black	*Homalotylus* Mayr
163.	Funicular segment cylindrical or oval or elongate, or slightly trapezoid; mandibles tridentate or with 1 or 2 teeth and a wide truncature	164
	Middle segments of funicle viewed laterally triangular, strongly expanded, with long stout setae; mandible curved, obscurely tridentate	*Prionomitus* Mayr
164.	Head and mesoscutum shagreened or reticulately squamous; head sometimes with a few punctae	165
	Head and mesoscutum with large umbilicate punctae; funicular segments with long verticillate hairs	*Bothriothorax* Ratzeburg
165.	Mandible distinctly tridentate	166
	Mandible with one or 2 denticles and wide truncature	170
166.	Funicle with long verticillate hairs	167
	Funicle with short hairs	168

167.	Occiput rounded, antennae stout but shorter than body, tegula white at base	*Cerchysius* Westwood
168.	Antennae filiform or fusiform; first funicular segment longer than pedicel; club rounded or elongate apically	169
	Antennae short, thickened apically; first funicular segment shorter than pedicel; club strongly obliquely truncate	*Litomastix* Thomson
169.	Antennae filiform	*Copidosoma* Ratzeburg
	Antennae fusiform	*Listomastix* Thomson, *Copidosoma* Ratzeburg
170.	Antennae with verticillate hairs, very stout equal to body; head convex	*Ooencyrtus* Ashmead
171.	Funicle slightly hairy or with short hairs	172
	Funicle densely hairy with long verticillate hairs	176
172.	Pedicel equal to first funicular segment	173
	Pedicel much shorter than first funicular segment	174
173.	Antennae inserted on lower orbital border; mesoscutum and scutellum dull, slightly shiny	*Ageniaspis* Dahlbom
	Antennae inserted close to the mouth; mesoscutum and scutellum more or less shiny	*Aphidencyrtus* Ashmead
174.	Mesoscutum and scutellum more or less convex; antennal segments cylindrical; club large; slightly produced apically	175
	Mesoscutum and scutellum flat; the terminal 2 or the terminal segments stout; submoniliform; club globose, obliquely truncate	*Mayridia* Mercet
175.	Vein *st* equal to or longer than *m*	*Encyrtus* Dalman
	Vein *st* much shorter; practically absent	*Subprionomitus* Mercet
176.	Pedicel shorter than funicular segments	177
	Pedicel equal to following segments; funicular segments ovate, subequal, with long verticillate hairs	*Coccidencyrtus* Ashmead
177.	Funicular hairs verticillate	178
	Funicular hairs scattered	181
178.	Vein *m* equal to *st*	179
	Vein *m* longer than *st*, scape compressed; middle of hind margin of mesoscutum densely pubescent; funicular segment long, well separated	*Cheiloneurus* Westwood
179.	Scapula and tegula metallic; occiput rounded, thorax shiny	180
	Scapula and tegula largely white, spotted brown; thorax dull; funicular hairs long thick, antennae white; occiput acutely margined	*Blastothrix* Mayr
180.	Antennae stout shorter than body; funicular hairs verticillate.	*Parasyrpophagus* Girault
	Antennae filiform longer than body, funicular hairs obscurely verticillate	*Tyndarichoides* Mecret

181. Head finely shagreened; without large punctae or with a few scattered punctae; scutellum flat — *Microterys* Thomson

Head rugoso-shagreened and densely punctate — 182

182. Antennae very stout, first funicular segment 0.33 times longer than thick; wing slightly infuscated — *Phaenodiscus* Förster

SUBFAMILY ENCYRTINAE

1840 *Encyrtides* (partim), Westwood, *Intr. Mod. Class. Ins. Synop.*, 72.
1856 *Encyrtoidae,* Förster, *Hymen. Stud.*, 1 : 18.
1875 *Encyrtina,* Thomson, *Hymen. Skand.*, 4 : 12, 112.
1886 *Encyrtinae,* Howard, *Ent. America,* 1 : 198.
1897 *Encyrtinae,* Ashmead, *Proc. ent. Soc. Washington,* 4 : 248.
1900 *Encyrtinae,* Ashmead, *Proc. US nat. Mus.*, 23 : 324.
1904 *Encyrtinae,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 292.

Mandibles with 2-3 teeth or broadly truncate apically, never acutely pointed; tarsi with 5 segments.

Tribe ECTROMINI

1904 *Ectromini,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 292.
1909 *Ectromina,* Schmiedeknecht, *Gen. Ins.*, 97 : 195.
1953 *Anagyrini,* Hoffer, *Ochr. Prir.*, 8 : 83.
1955 *Anagyrini,* Hoffer, *Sb. narod. Mus. Praze,* 11 (1) : 1.
1973 *Anagyrini,* Hayat *et al., Aligarh Mus. Univ. Mon.*, 9 : 6.

Body relatively slender; antennae long, generally filiform, inserted close to clypeus; labrum distinct; mandibles more or less acutely long, bidentate apically; fore wings with vein *m* rather long *st* short; hypopygium in femalre large, ploughshare-shaped, projecting beyond the tip of abdomen; second tergite large.

1. RHOPUS — GROUP OF GENERA

Rhopus Förster

1856 *Rhopus,* Förster, *Hymen. Stud.*, 2 : 34, 37, 151.
1875 *Rhopus,* Mayr, *Verh k. k. zool.-bot. Ges. Wien,* 25 : 690.
1902 *Xanthoencyrtus,* Ashmead, *Canad. ent.*, 34 (11) : 302.
1904 *Metallon,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 305.
1909 *Rhopus,* Schmiedeknecht, *Gen. Ins.*, 97 : 258.
1915 *Mirastymachus,* Girault, *J. N. Y. ent. Soc.*, 23 (3) : 166.
1915 *Scelioencyrtus,* Girault, *Mem. Queensland Mus.*, 4 : 161.
1918 *Pholidoceras,* Mercet, *Bol. Soc. Espan. Hist. Nat.*, 18 (3-4) : 237.
1921 *Rhopus,* Mercet, *Fauna Iberica,* 83.
1928 *Rhopus,* Mercet, *Eos,* 4 (1) : 5.

1955 *Rhopus,* Hoffer, *Acta, Mus. nat. Pragae,* 11 (1) : 17.
1955 *Pholidocerodes,* Ferrière, *Bol. Lab. zool. Gen. Agr. Portici,* 33 : 358.
1956 *Rhopus,* Ghesquiere, *Bol. Lab. zool. Gen. Agr. Portici,* 33 : 683.
1957 *Rhopus,* Ghesquiere, *Neotropica,* 3 (10) : 17.
1961 *Rhopus,* Ting-hsi, *Ent. Rev.,* 40 (1) : 72.
1963 *Rhopus,* de Santis, *Ann. Com. Invest. Cient. Prov. Buenos Aires,* 4 : 52.
1969 *Rhopus,* Graham, *Polskie Pismo Ent.,* 39 (2) : 220.
1978 *Scelioencyrtus,* Subba Rao & Hayat, *J. ent. Res.,* 2 (1) : 1.
1979 *Rhopus,* Krombein *et al.,* Hymen. N. America, 1 : 916.

Female : Body much depressed, yellow or testaceous, with black and weakly metallic reflections.

Head viewed in front subtriangular much wider than long; eyes hairy or subglabrous; ocellar triangle equilateral; interocellar space equal to ocellocular space; mandible bidentate; antenna short, inserted close to the mouth border, with 8 segments : 1.1.5.1; scape short, fusiform; pedicel much longer than thick, equal to the following 3 segments combined; funicular segments 1-3 moniliform, 4 and 5 becoming gradually longer and a little thicker, club entire, thicker than the preceding segment, as long as funicle, 3-articulate with obscure suture.

Mesonotum entire; axillae contiguous; wings wide, hyaline or faintly infumate, with speculum interrupted in the middle; vein *sm* very long, *m,* punctiform, *pm* and *st* well developed; middle tibial spur equal to metatarsus; middle tarsus a little thicker than hind tarsus; metatarsus of all legs as long as the fifth segment; hind tibial spurs 2.

Abdomen oval or triangular, longer than thorax; first tergite transverse; terminal segment reduced; ovipositor concealed; general colour of body reddish-yellow.

Male : Antennae with scape, pedicel, funicle 6 and club; funicle shorter than the following segment; pedicel subequal or shorter than the following segment; funicular segments subquadrate or funicular segments 2 times longer than thick, with long setae in 2 rows; club entire rounded apically, not thicker than the preceding segments, a little shorter than the fifth and sixth segments combined; vein *sm* as in female; abdomen rounded apically.

Type-species : Rhopus piso (Walker)

KEY TO SPECIES

1.	Club with 3 segments	*R. desantisiellus* Ghesq.
	Club with 2 segments	2
2.	Wings about 2.50 times longe than wide	*R. gramineus* Hayat
	Wings about 3 times longer than wide	3
3.	Eyes slightly pubescent	*R. comperei* (Subba Rao)
	Eyes bare	4

4. Scape almost 3 times longer than thick	*R. quadrii* (Shafee, Alam & Agarwal)
Scape 2.50 times longer than thick	*R. longiclavatus* (Shafee, Alam & Agarwal)

Rhopus desantisiellus Ghesquière

(Fig. 162)

1957 *Rhopus desantisiellus,* Ghesquière, *Neotropica, 3 : 18.*

1963 *Rhopus desantisiellus,* de Santis, *An. Com. Inv. Cient. Prov., Buenos Aires,* 4 : 53-56.

1975 *Rhopus desantisiellus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 35.

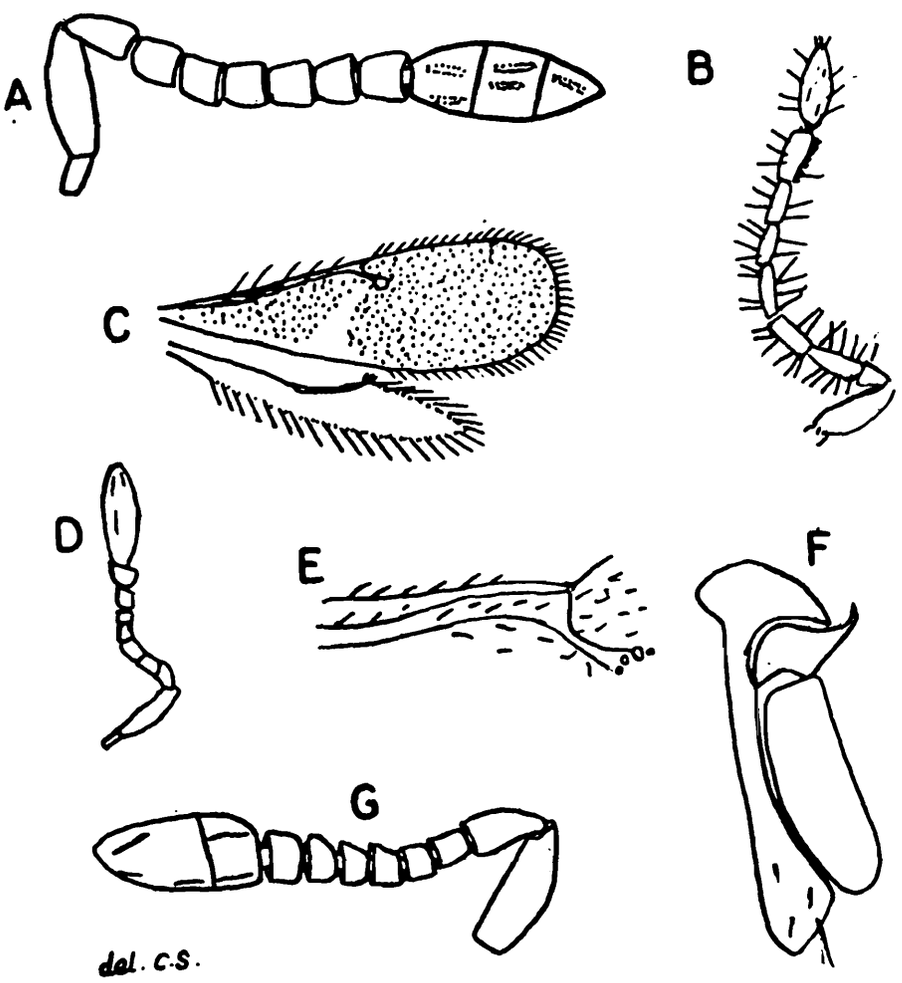

FIG. 162. A. *Rhopus desantisiellus* Ghesquière, female, Antenna; B-D. *Rhopus comperei* (Subba Rao) : B. Antenna, male; C. Fore and hind wing, female; D. Antenna, female; E-G. *Rhopus quadrii* (Shafee, Alam & Agarwal) : E. Stigmal venation, female; F. External genitalia; G. Antenna, female. *(Modified from different authors).*

Female : Length 0.95 mm. Body yellowish-brown; head yellowish-brown; antennae brown; thorax yellowish-brown except for brown front margin of scutum, axillae, metanotum and propodeum; legs orange-yellow; wings hyaline; abdomen yellow.

Head flattened; in front wider than long; frontovertex slightly wider than long; ocellar triangle obtuse-angled; ocellocular space 2 times ocellar diameter; ocelloccipital space equal to ocellar diameter; eyes sparsely setose; gena as long as eye; antennae inserted just above oral margin; prominence between antennal sockets about 0.50 of width of frontovertex; mandibles bidentate; scape more or less cylindrical, less than 3 times longer than thick; pedicel 1.50 times longer than thick; distinctly longer than first funicular segment; funicular segments 1 and 6 long; club, 3-segmented, about as long as the preceding 4 funicular segments combined.

Scutum distinctly wider than long; axillae contiguous; scutellum slightly shorter than scutum; fore wing slightly more than 2.50 times longer than wide; vein *sm* with 11 long setae; vein *m* punctiform; vein *pm* rudimentary; marginal fringe short, spaced by a distance equal to 0.25 of hair length; hind wings 6 times longer than wide.

Abdomen longer than head and thorax combined; ovipositor hidden.

Type locality : Udaipur

Host : Unindentified mealybug on sugarcane

Rhopus gramineus Hayat

1969 *Rhopus gramineus,* Hayat, *Bull. Ent.,* 10 (2) : 110.

Female : Length 1.04 mm. Head blackish-brown, slightly shiny; whitish transverse band behind lateral ocelli extending laterally behind eyes; antennae yellowish-white, apical margin of first club segment and distal 2 club segments brown; thorax yellow; hind margin of pronotum and front margin of mesoscutum brownish; axillae anteriorly, scutello-axillar sutures, sides and posterior margin of scutellum, metanotum and propodeum dull brown; scutellum with 2 brown setae; wings hyaline; legs yellowish-white; abdomen whitish-yellow; sides and dorsum faintly brown.

Frontovertex slightly wider than long; ocellar triangle obtuse; gena shorter than eye; mandibles bidentate; maxillary and labial palpi 2 and one segmented respectively; scape slightly more than 3 times longer than thick; pedicel longer than following 2 funicular segments; first funicular segment slightly longer than thick, second as long as thick, 3-5 thicker than long; sixth larger; club as long as funicle.

Scutellum slightly wider than long, as long as mesoscutum, mesopostphragma reaching upto first abdominal segment, apex truncate; fore wings more than 2.50 times longer than wide, marginal

fringe shorter than those hind wings; vein *m* punctiform, *pm* absent, *st* short; speculum distinct, interrupted behind by 5 rows of setae; hind wings more than 7 times longer than wide, marginal fringes longer than 0.50 of the wing width; middle tibial spur shorter than metatarsus.

Abdomen longer than head and thorax combined; cercal plates situated at middle of abdomen; ovipositor hidden.

Type locality : Punjab : Patiala

Rhopus comperei (Subba Rao)

(Fig. 162)

1960 *Xanthoencyrtus comperei,* Subba Rao, *Proc. Indian Acad. Sci.,* (B) 51 (6) : 276.

Female : Length 1.17-1.23 mm. Body yellow; margin of metathorax brown; club dark brown; eyes deep red; mandibles orange-yellow; ocelli red.

Head rounded, a little wider than thorax, about 1.25 times longer than wide; eyes elongate-oval, slightly pubescent, inner orbital margins parallel; gena slightly less than 0.50 of eyes; mandibles bidentate; spines present on head though stouter and longer on vertex; ocellar triangle obtuse-angled; interocular space 2.25 times othe interocellar, latter 2 times front ocellar, 1.33 times ocellocular; antennae inserted slightly above the clypeal margin; sockets about 2 times their own diameter apart; flagellar segments somewhat cup-shaped; antennal segments ratio 14 : 8 : 4: 3 : 4 : 3 : 4 : 5: 20; club distinctly 2-segmented, first being about 0.50 of the second; sensorial pits present on the club as well as on the last 4 flagellar segment though the pits are not so prominent on the flagellar segments.

Thorax very finely reticulate; hair all over thorax but more dense on prothorax and part of mesocutum; scutum dome-shaped, larger than scutellum, 1.25 times as wide as its median length; scutellum about 1.50 times wider than median length; axillae broad, inner ends acute, meeting medially; scutellar margins somewhat arcuate; a pair of spines of basal margin of scutum, pair in the middle of scutellum; metathorax narrow; propodeum very short in the middle; spiracle circular, about 1.25 times its diameter away from the side; fore wings broad, 3 times longer than broad, reaching slightly beyond the tip of abdomen; marginal fringle short; speculum narrow, oblique, starting from vein *st* backward and slightly interrupted about its middle, then from the hind border continues proximally; vein *sm* about 0.50 of wing; vein *m* punctiform; vein *st* 2 times the length of *m;* hind wings 7.50 times longer than wide; cilia on the front margin very short but on the hind margin 0.75 of its greatest width; middle legs comparatively weak, slender; hind legs stouter; hind tibia equal to femur and trochanter combined; first 2 tarsal segments equal to the next 3 tarsal segments.

Abdomen about 1.50 times longer than thorax, oblong-ovate; apparently 6 segmented, broadly sessile; vibrissal plates situated a little before the middle, with 4 vibrissae, of which 3 quite long and conspicuous; paratergites well defined but very narrow; ovipositor very short, situated at apex, scarcely protruding.

Male : Length about 0.94 mm. A little deeper in colour than female. Like female, differing in antenae and abdomen; head slightly shorter, gena a little over 0.50 of eyes; antennal segments ratio 25 : 10 : 15 : 15 : 12 : 12 : 15 : 28 : flagellar segments cylindrical, with a long sensorial ridge; last flagellar segment a little thicker than the rest, with a row of about 7 funnel-shaped, sensorial organs, along the longitudinal axis; long whorls of hairs prominent, club solid ovate, as thick as last funicular segments.

Type-locality : India : Delhi

Host : Saccharicoccus sacchari (Cockll.)

Rhopus qadrii (Shafee, Alam & Agarwal)

(Fig. 162)

1975 *Xanthoencyrtus qadrii,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 30.

Female : Length 1.14 mm. Body yellow; head yellow; ocelli white; antennae yellowish-brown, first 3 funicular segments dark brown; thorax yellow; legs orange-yellow; wings hyaline; abdomen orange-yellow.

Head suboval, dorso-ventrally flattened; frontovertex distinctly wider than long; ocelli almost in a line, ocellocular space 2 times ocellar diameter, ocelloccipital space equal to ocellar diameter; gena shorter than eye; prominence between antennal sockets distinctly shorter than width of frontovertex; antennae inserted just above the oral margin; eyes bare; mandibles bidentate; maxillary and labial palpi 2 and one segmented respectively; scape slightly less than 3 times longer than thick; pedicel about 2 times as long as thick, shorter than the 3 following funicular segments combined; first funicular segment slightly longer than thick, segments 2-6 gradually thickened apically; second and third funicular segments slightly thicker than long, sixth segment 1.50 times thicker than long; club 2 segmented, slightly more than 2 times longer than thick, subequal to the preceding 5 funicular segments combined.

Thorax flat; pronotum constricted in the middle; axillae contiguous; scutum wider than long, longer than scutellum, latter with broadly rounded apex; mesopostphragma short; fore wings slightly less than 3 times longer than wide; costal cell slightly narrow; vein *m* 2 times longer than thick; vein *pm* rudimentary; vein *st* longer than *m-pm* combined; marginal fringe short; hind wings 7 times

longer than wide; length of marginal fringe slightly more than 0.50 of the wing width; middle tibial spur equal to metatarsus.

Abdomen distinctly longer than head and thorax combined; ovipositor short, issuing from tip of abdomen; outer plates of ovipositor more or less of uniform width with thickened dorsal margin.

Male differs from female in the following : Scape long and cylindrical, slightly less than 3 times longer than thick; pedicel quadrate; funicular segments distinctly longer than thick and with long straight hairs; club unsegmented, shorter than the preceding 2 funicular segments combined.

Type locality : Almora — Ranikhet — Chaubatia

Host *Ripersia* sp.

Rhopus longiclavatus (Shafee, Alam & Agarwal)

1975 *Xanthoencyrtus longiclavatus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 31.

Female : Resembles *R. qadrii* (Shafee *et al.*) but is separated as follows : Antennae yellow except the dark brown first 3 funicular segments and club; scape dilated, 2.50 times longer than thick; pedicel less than 2 times as long as thick, as long as the preceding 3 funicular segments combined; funicular segments 1-6 distinctly thicker than long; club less than 2 times as long as thick, longer than funicular

Type locality : Motihari — Narkatiaganj (Bihar)

Host *Maconellicoccus hirsutus* (Green)

Species Incertae Sedis

Rhopus indicus (Shafee, Alam & Agarwal)

1975 **Scelioencyrtus indicus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 33.

Female : Length 0.89 mm. Body dark brown to yellowish-brown; head yellowish-brown; ocelli red; scape and pedicel yellowish-brown; rest of antenna dark brown; scutum behind, pleura and sterna yellow; thorax otherwise dark brown; wings hyaline; legs yellow to pale yellow; abdomen infuscate above and yellow below.

Head prognathous, distinctly wider than long; ocelli almost in line; gena equal to eye; antennae inserted just above the oral margin; prominence between antennal sockets about 0.50 of the width of frontovertex; mandibles bidentate; maxillary palpi 2 segmented; labial palpi one segmented; scape fusiform, 2 times longer than thick,

* Subba Rao & Hayat remark that the males definitely belong to *Rhopus,* but females doubtfully placed.

pedicel about 1.50 times longer than thick, slightly shorter than the preceding 2 funicular segments combined; first funicular segment as long as thick; segments 2-6, 1.50 times thicker than long; club 2 segmented, 2.50 times longer than thick, slightly shorter than the preceding 5 funicular segments combined; first club segment about 0.50 of the apical segment.

Thorax flattened; mesoscutum reticulate, slightly less than 2 times wider than long; scutellum longitudinally reticulate, as long as scutum, slightly wider than long, posterior margin rounded; fore wings 3 times longer than wide; sparsely indistinctly ciliate and without speculum; costal cell narrow; vein *m* punctiform; vein *pm* rudimentary; vein *st* longer than *m-pm* combined; marginal fringe long, more than 0.50 of wing width; hind wings narrow, slightly more than 9 times longer than wide; marginal fringe longer than wing width; middle tibial spur longer than metatarsus.

Abdomen flattened, distinctly longer than throax.

Male : Differs from the female in the following : Length 0.75 mm; scape slightly more than 2 times longer than thick; pedicel about as long as thick, slightly more than 0.50 of first funicular segment; funicular segments 6, first segment slightly less than 2 times longer than thick, segments 2-5 subequal and each about 1.50 times longer than thick, sixth large a little more than 2 times longer than thick; club entire, less than 3 times longer than thick; fore wings 2.50 times longer than wide; marginal fringe short and about 0.20 of wing width.

Type-locality : Muzaffarpur (Bihar)

Host : Saccharicoccus sacchari (Coq.) on sugarcane.

Arhopoideus Girault

1915 *Arhopoideus,* Girault *Mem. Queensland Mus.,* 4 : 174.
1929 *Arhopoideus,* Girault, *Trans. Proc. R. Soc Austrl.,* 53 : 315.
1946 *Hungariella,* Erdös, *Ann. Hist. Nat. Mus. Hungarici,* 39 : 144.
1960 *Hungariella,*Hoffer, *Acta Faun. ent. Mus. Nat. Pragae,* 6 : 101.
1963 *Hungariella,* De Santis, *Ann. Com. Invest. cient. Buenos Aires,* 4 : 109.
1971 *Arhopoideus,* Tachikawa, *Trans. Shikoku ent. Soc.,* 11 (1) : 21.
1979 *Arhopoideus,* Krombein *et al.,* Hymen. N. America, 1 : 918.

Female : Head convex, longer than wide; occiput excavate; scrobe long; gena equal to eye; mandible small, with 2 minute teeth; maxillary palpi with 2 and labial palpi with one segment; eyes hairy; compressd, clavate, inserted near the mouth; segments 10 : 1.1.5.3; scape a little dilated; first funicular segment longest; club thick, equal to funicle; vein *m* a little over 2 times longer than thick, subequal to *st; pm* absent; hind tibial spur single; abdomen longer than rest of body, compressed; ovipositor hardly exserted; tarsi with 5 segments; axillae a little separated; scutellum rounded, equal to scutum.

Male with eyes hairy; scrobes deep; first funicular segment transverse; 4 segments with long branches and one vestigial branch.

Type-species : A. brevicornis Girault

KEY TO SPECIES

1. First funicular segment without branch; annelli absent — *A. heterocornis* (Mani & Kaul)
   Fifth funicular segment without branch; 2 annelli minute and almost inconspicuous — *A. indicus* (Ramakrishna Ayyar)

Arhopoideus heterocornis (Mani & Kaul)

(Fig. 163)

1974 *Tetracnemus heterocornis,* Mani & Kaul, *Mem. School Ent.,* 3 : 75.
1976 *Arhopoideus heterocornis,* Subba Rao, *J. nat. Hist.,* 10 : 687.

Male : Length 1.30 mm; range 1.16-1.50 mm, mean 1.28 mm. Body very dark brown to black, with metallic-green reflections on head, pronotum, mesonotum and scutellum, less prominent on abdoment; dark blue reflections on last abdominal tergite; head

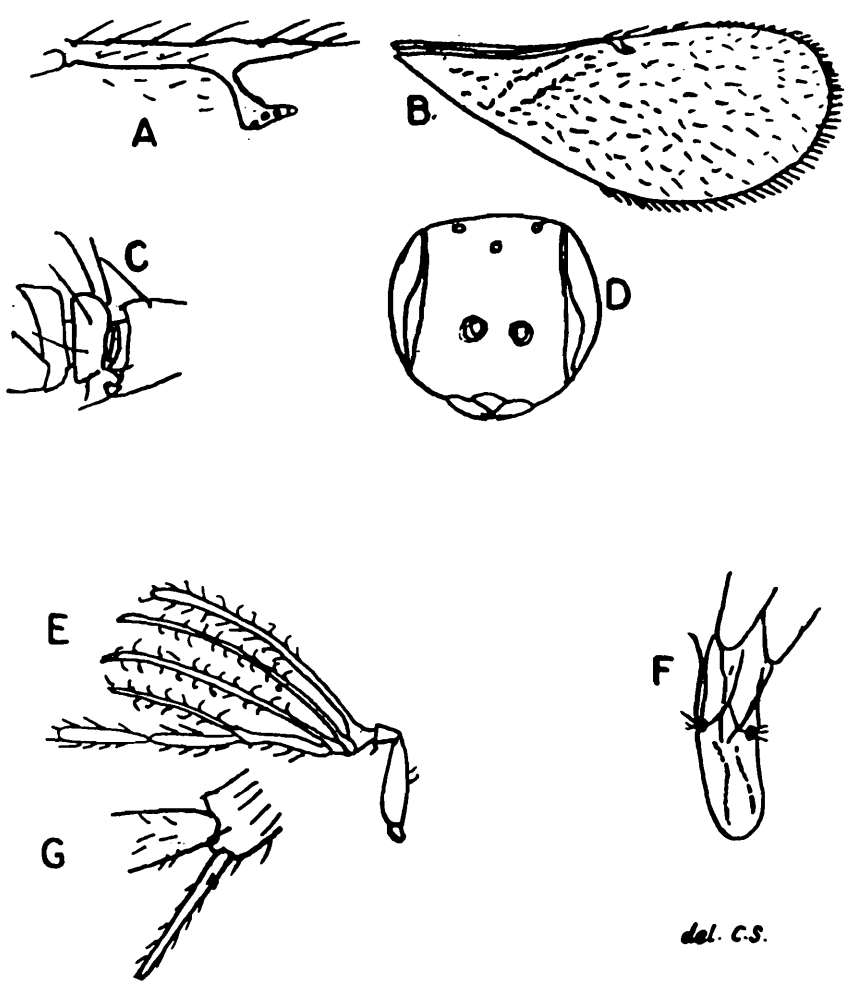

FIG. 163. *Arhopoideus heterocornis* (Mani & Kaul), male : A. Stigmal venation; B. Fore wing; C. First funicular segment; D. Head in front; E. Antenna; F. Genitalia; G. Middle tibial spur.

black, eyes dark brown or red; antenna black; scape, pedicel and flagellum faintly metallic; legs dark brown to black, coxae, middle and hind femora, basal 0.75 of fore femur, hind trochanter, fore tibia except base and tip, apical 0.75 of middle and hind tibia, last tarsus concolorous with body, otherwise legs brown; wings hyaline, veins dark brown.

Head in front length to width 87-90 : 100, finely reticulately shagreened; cylpeus slightly incised in front; ocellocular and front ocellar space about 1.50 times ocellar diameter; eyes pubescent; mandibles bidentate; antennal segments 9 : 1.1.6.1; scape slightly compressed in the middle, with fine microsculpture, almost 4 times as long as thick; radicle about 0.21 of scape; pedicel about 1.40 times longer than thick, slightly less than 0.33 of scape; first funicular segment without branch, segments 2-5 with branches, first segment 2.30-2.40 times thicker than long, length ratio of segments 1-4 : 5 : 3 : 6 : 7; fifth funicular segment subequal to scape and sixth funicular segment; its branch slightly longer than 1.50 times segment; length ratio of rami 1-4 : 3 : 3 : 28 : 16; club solid, stout, subequal to preceding funicular segment and to scape, 5 times longer than thick; funicular rami and club with whorls of curved setae.

Thorax finely reticulately shagreened; axillae contiguous; parapsidal furrows absent; fore wing length to width 100 : 41, with speculum; veins *sm, m* and *pm* with 10, 3 and 3 long setae respectively; veins *sm* : *m* : *pm* : *st* ratio 400 : 100 : 45 : 45; hind to fore wing length 71 : 100; fore coxae 2.20 times longer than thick, with fine microsculpture and with 3 long setae above; femur slightly reduced apically, about 4.50 times longer than thick, with fine microsculpture, about 1.40 times coxa; tibia slender basally, subequal to femur, about 6 times longer than thick; tarsus 1.13 times longer than tibia, metatarsus very slightly less than 0.33 of tibia and a little less than 0.25 of tarsus, with 14 stout spines below, second segment 0.66 of metatarsus and subequal to the third, fourth subequal to the third or second, fifth only very slightly shorter than metatarsus; middle coxa 1.50 times as long as thick, with fine microsculpture; femur slightly reduced apically, 6-7 longer than thick, with fine microsculpture, slightly longer than 2 times coxa; tibia slender basally, about 8.80 times longer than thick, about 1.32 times femur, tibial spur stout, long, subequal to metatarsus, about 10.8 times longer than thick; tarsus slightly shorter than femur, about 0.80 of tibia, metatarsus about 0.25 of tibia, and about 0.32 of tarsus, with 5 stout spines below, second segment slightly more than 0.50 of metatarsus, third only very slightly less than the second and subequal to the fourth; fifth subequal to the second; hind coxa almost as long as wide, with fine microsculpture; femur slightly reduced apically, 4 times as long as wide, with fine microsculpture, about 2.30 times coxa; tibia slender basally, 8.40 times longer than thick, 1.31 times femur, spur about 0.16 of tibia and about 0.70 of metatarsus; tarsus

slightly longer than femur, tarsus to tibia 4 : 5, metatarsus about 0.25 of tibia, slightly less than 0.33 of tarsus, with 7 stout spines below, second segment slightly more than 0.50 of metatarsus, third almost subequal to the second and fourth segments, fifth 0.75 of metatarsus.

Abdomen with fine reticulate microsculpture, only very slightly less than 0.50 of body; aedeagus 0.23 of abdomen; genitalia with 2 hooks.

Type locality Mahabaleshwar-Satara Road

Distribution : Wai, Khandala; Aravalli Hills

* **Arhopoideus indicus** (Ramakrishna Ayyar)

1932 *Tetracnemus indicus,* Ramakrishna Ayyar, *Rec. Indian Mus.,* 34 (3) : 287.
1938 *Tetracnemus indicus,* Mani, *Cat. Indian Ins.,* 23 : 87.
1940 *Tetracnemus indicus,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 14.
1967 *Hungariella indica,* Kerrich, *Bull. Brit. Mus. nat. Hist.* (Ent.) 25 (5) : 162.
1974 *Arhopoideus indicus,* Tachikawa, *Trans. Shikoka Ent. Soc.,* 12 : 33.

Male : Length 1.10 mm. Body generally grey-brown, with legs pale-blue; parts of mesonotum and posterior region of abdomen darker; eyes black; ocelli brown; scape almost white, pedicel brown; other segments and branches pale grey; mandibles light grey, with brown tips; thorax grey-brown; wings hyaline; hind femora and tibiae grey-brown; posterior region darker.

Head hemispherical, wider than long, widest across eyes; front margin arched, with 2 conspicuous acute projections on each side of median line; head finely reticulate; antennae almost as long as head and thorax; scape projecting far beyond anterior margin of head, uniformly thick; pedicel short, globose, narrower basally; annelli 2, very small, inconspicuous; funicle with long branches; ramus of first funicular segment constricted at base, basal portion broader and as long as next segment; base of third segment longer than that of either the first or the second and shorter than that of the fourth, fifth funicular segment without branch, slightly longer than the base of fourth; club elongate, ovoid; funicular segments, branches and club with long hairs.

Thorax massive, faintly reticulate; vein *st* with sharp spines.

Abdomen elongate-oval, almost as long as thorax, but narrower; segmental divisions faint, lateral hair tuft on third tergite fairly long.

Type locality : Coimbatore

Distribution : India

Host : Pseudococcus citri on *Sesbania aculeata*

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* Hayat (1986) places this under *Tassonia* Gir.

Hamusencyrtus Subba Rao & Hayat

1978 *Hamusencyrtus,* Subba Rao & Hayat, *J. ent. Res.,* 2 (1) : 2.

Female : Body elongate, dorsoventrally flattened; head prognathous, vertex highly convex; eyes small, not much longer than gena; ocellar triangle obtuse; antennal sockets near oral margin; mandibles with 2 acute teeth; maxillary and labial palpi with 2 and one segments respectively; scape short, slightly compressed; pedicel longer than first funicular segment; funicular segments short, first and sixth as long as thick, 2-5 thicker than long; club with 2 segments, basal segments about 0.50 of apical segment.

Thorax more or less similar to *Rhopus*; pronotum composed of 2 triangular plates joined medially by a membrane; axillae small, very narrowly combined by their median angles; scutellum broadly rounded, behind with 2-3 pairs of short setae, apical margin with 3 pairs of setae, middle pair about 0.50 of others; fore wings long, almost parallel sided beyond veins and evenly rounded apically; veins *m* and *pm* combined knob-like with a strong bristles; speculum absent or at least nor distinct; sparsely setose; fringe longer than 0.50 of width of disc; metatarsus shorter than following 2 segments; middle tibial spur longer than corresponding metatarsus.

Male : Similar to female; sixth funicular segment large, strongly curved outward, like a hook, with sensary pits, club solid; genitalia short with the phallobase broad basally and gradually narrowed apically.

Type-species : Hamusencyrtus mymaricoides (Compere, Subba Rao & Kaur)

This genus is closely related to *Rhopus* subgenus *Xanthoencyrtus,* but differs in the following : Head with highly convex vertex; eyes small, not much longer than gena; funicle and club especially in female with long hairs; mesoscutum and scutellum sparsely setose, latter with only 2-3 pairs of short setae on this and 3 pairs of setae on apical margin; fore wings parallel sided beyond veins with evenly rounded apex, sparsely setose, speculum absent, veins *m* and *pm* distinctly demarcated but in the form of a knob, fringe longer than 0.50 of the width of disc; middle and hind metatarsus shorter than following 2 segments, middle tibial spur longer than metatarsus; in the male by the shape of the sixth funicular segment and genitalia.

Hamusencyrtus mymaricoides (Compere, Subba Rao & Kaur) (Fig. 164)

1960 *Scelioencyrtus mymaricoides,* Compere *et al., Proc. Nat. Inst. Sci. India,* (B) 26 : 46.

1975 *Scelioencyrtus indicus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* Zool.) 10 : 33.

1978 *Hamusencyrtus mymaricoides,* Subba Rao & Hayat, *J. ent. Res.,* 2 (1) : 3.

Distinguished from other Encyrtidae by the extraordinarily long marginal fringe of the wings, by the unusual sixth funicular segment in male.

Female : Length 1.00-3.00 mm. Body generally yellow to yellowish-white, or pale with extensive brown to blackish suffusions; head in front, greater part of mesoscutum, scutellum and axillae, abdomen near base and the tenth tergite yellow; ventral parts of thorax and abdomen, largely if not complete yellowish-white, or pale; legs concolorous except for the black; antennae dark brown or blackish, with scape and pedicel more or less suffused with pale yellow; gena and lower part of face between antennal sockets brown; occiput concolorous with thorax ventrally; pronotum, more or less, anterior margin of mesoscutum, sides and hind margin of scutellum, metanotum, more or less mesopleura and basal wing process brown to black; propodeum pale brown and somewhat whitish on abdomen at base grading to yellow-brown.

Frons, mesoscutum, axillae and scutellum very finely and closely reticulately-punctate, shining, exceedingly finely, sparsely pubescent; wings highly iridescent, with exceedingly fine, pale, scattered hairs, which do not form a definite speculum; head wider than long; eyes small, protuberant, about as long as cheeks; ocelli large, almost in a transverse line across the vertex; scape short, thick, not compressed below, slightly more than 2 times as long as thick; pedicel about 1.50 times as long as thick; first funicular segment slightly longer than thick, following 4 segments slightly thicker than long, sixth about as thick as long; club with 2 segments, subequal to preceding 4 funicular segments combined, slightly thicker; one or 2 linear sensillae on each funicular segment; hairs on antennae moderately long and sparse; fore wing more than 3 times as long as wide, almost parallel, distad of veins, almost evenly rounded apically; vein *sm* long, weak, terminating apically in an enlargement scarcely recognisable as veins *m* and *pm*; vein *st* normal.

Male : Maxillary palpi with 2 segments, labial palpi with one segment, mandibles with 2 teeth; apical abdominal tergite enlarged, margined on either side by well developed paratergites; ovipositor short, enclosed in tip of abdomen of sternum of the last tergite; ovipositor sheaths (= styli) vestigial or absent; inner and outer parts of ovipositor (= gonocoxites and gonotergites) scarcely more than 2 times as long as wide; middle tibial spur small and weak, subequal to metatarsus; mesopleura slightly enlarged appearing in relatively simple form with a ridge extending horizontally from lateral coxal condyles to posterior margin of mesopleura; mesosternum partially divided into 3 transverse subequal sections by 2 submedian sutures or ridges; antennae inserted close to the oral margin; head articulated to the cervical processes high above the middle of occiput; except for antennae, genitalia and certain modifications of the sclerites of abdomen, males closely resemble female. In males the sixth funicular

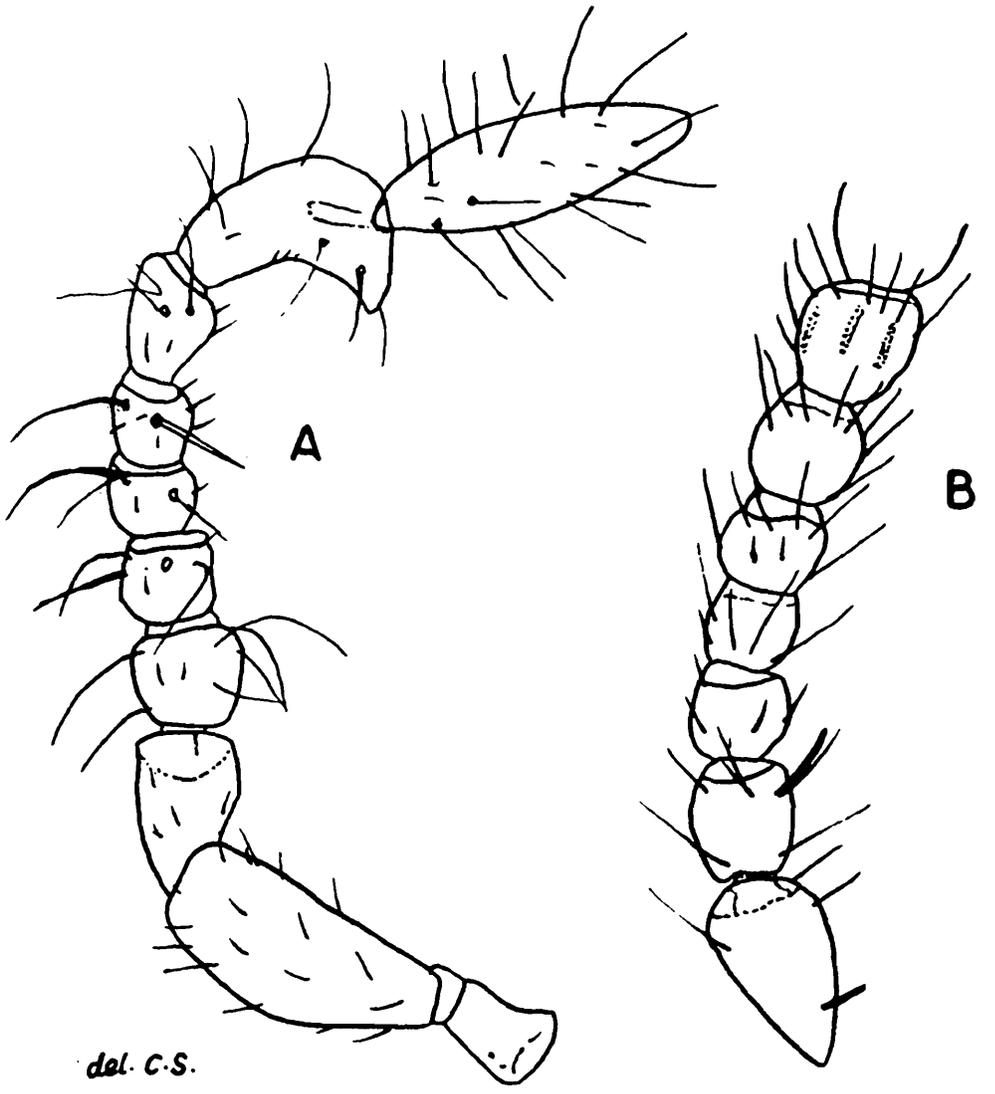

FIG. 164. *Hamusencyrtus mymaricoides* (Compere, Subba Rao & Kaur) : A. Antenna, male; B. Antenna, pedicel and funicle. (*Modified from* Subba Rao).

segment more than 2 times the preceding segments, flattened and slightly thickened apically, one side concave and other convex, concave side with crowded, circular sensory pits; club small, solid, elongate, about 3 times as long as thick and uniformly and evenly tapered at both ends; unlike female, flagellum with whorls of curved hairs.

Type locality : Delhi : India

Distribution : India : Delhi, Muzafferpur

Host : Saccharicoccus sacchari (Ckll.)

2. Leptomastix — Group of Genera

Alamella Agarwal

1966 *Alamella,* Agarwal, *Proc. Indian Acad. Sc.,* (B) 63 : 77.
1975 *Alamella,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 7.

Body non-metallic, yellow; antennae in female with 11 segments, scape compressed, gradually wider apically, pedicel very short; funicle with 7 segments, club biarticulate; funicle in male with 6 segments, club unsegmented; pedicel much shorter than first funicular segment; wings hyaline; tenth tergite enlarged; fore wing with vein *st* longer than *m* and *pm* combined; axillae broadly contiguous; subgenital plate subtriangular, with front margin straight, hind margin notched in the middle; outer plate of ovipositor uniformly wide; first valvifers semi-circular; second valvifers dorsal margin thickened; valvulae short.

Type-species : Alamella flava Agarwal

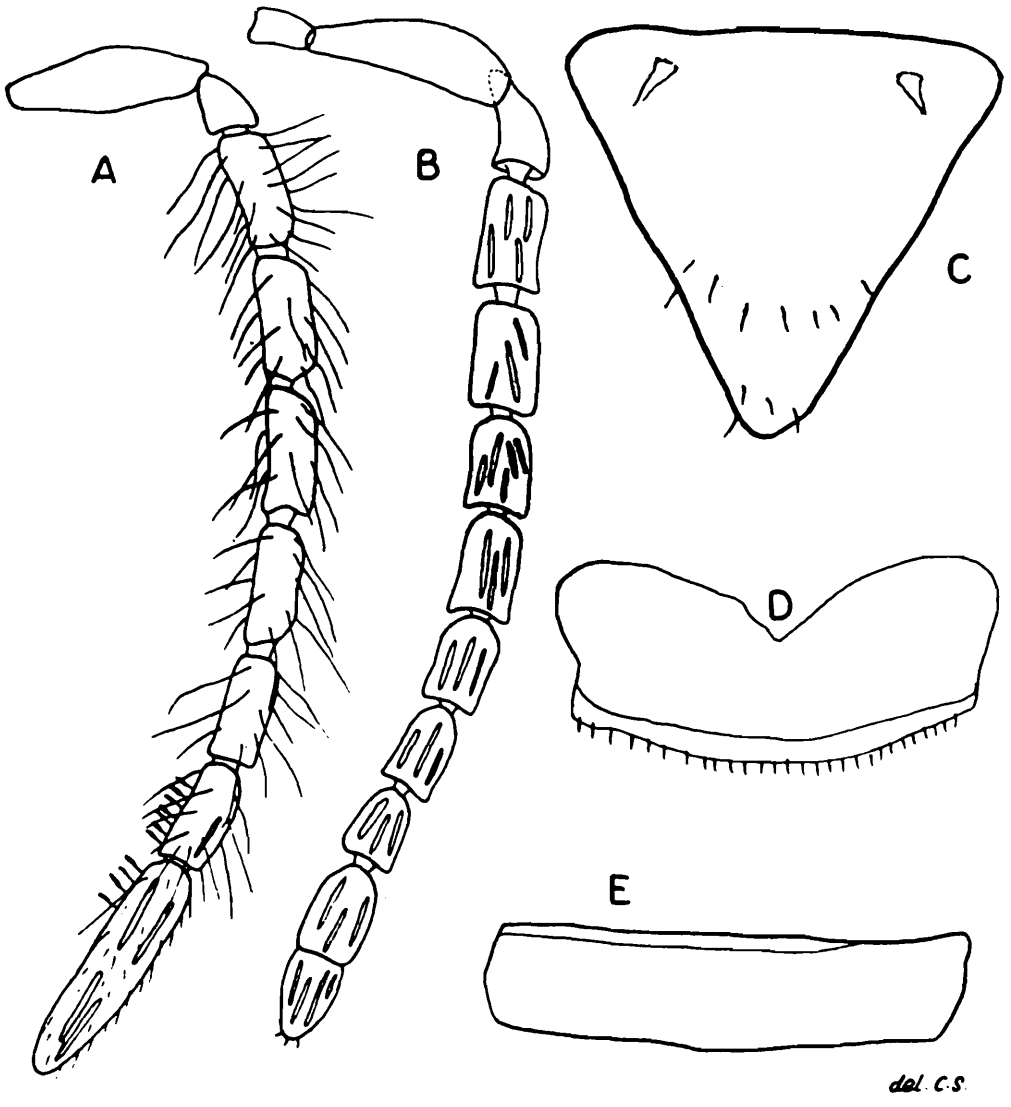

Fig. 165. *Alamella flava* Agarwal : A. Antenna, male; B. Antenna, female; C. Subgenital plate; D. Pronotum; E. Outer plate of ovipositor. (*Modified from* Agarwal).

Alamella flava Agarwal

(Fig. 165 & 166)

1966 *Alamella flava,* Agarwal, *Proc. Indian Acad. Sci.,* (B) 63 : 77.

1975 *Alamella flava,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 7.

Female : Length 1.11 mm. Body yellow; head orange to light brown, postocciput infumate; ocelli light red; eyes oval, bare, longer than broad; ocellar triangle acute; antennal sockets on lower orbital border; scrobes deep, carinate laterally and above, interscrobal area ridged; mandibles bidentate, acute; maxillary palpi with 3 segments, third segment longer than the preceding 2 segments combined; labial palpi with 2 segments; antennae with 11 segments; scape, pedicel and first 5 funicular segments yellowish-white, with a light smoky tinge, sixth and seventh funicular segments and the club darker; 9 consecutive segments of the funicle and club with 18, 18, 14, 11, 16, 10, 8, 7 and 6 sensoria respectively.

Thorax uniformly light yellow to orange; pronotum light yellow with some touches of white posterolaterally; pleura and sterna concolorous; tegulae whitish; fore coxae, trochanters and femora almost colourless, tibiae and tarsi with a very light tinge of yellow; femora much longer than tibiae, middle tibiae light yellow in the middle; tibial spur shorter than metatarsus; tip of metatarsus and second, third and fourth tarsal segments with 6, 7, 4, 3 and 3 pegs respectively; hind femora shorter than tibiae, tibial apex with a single seta.

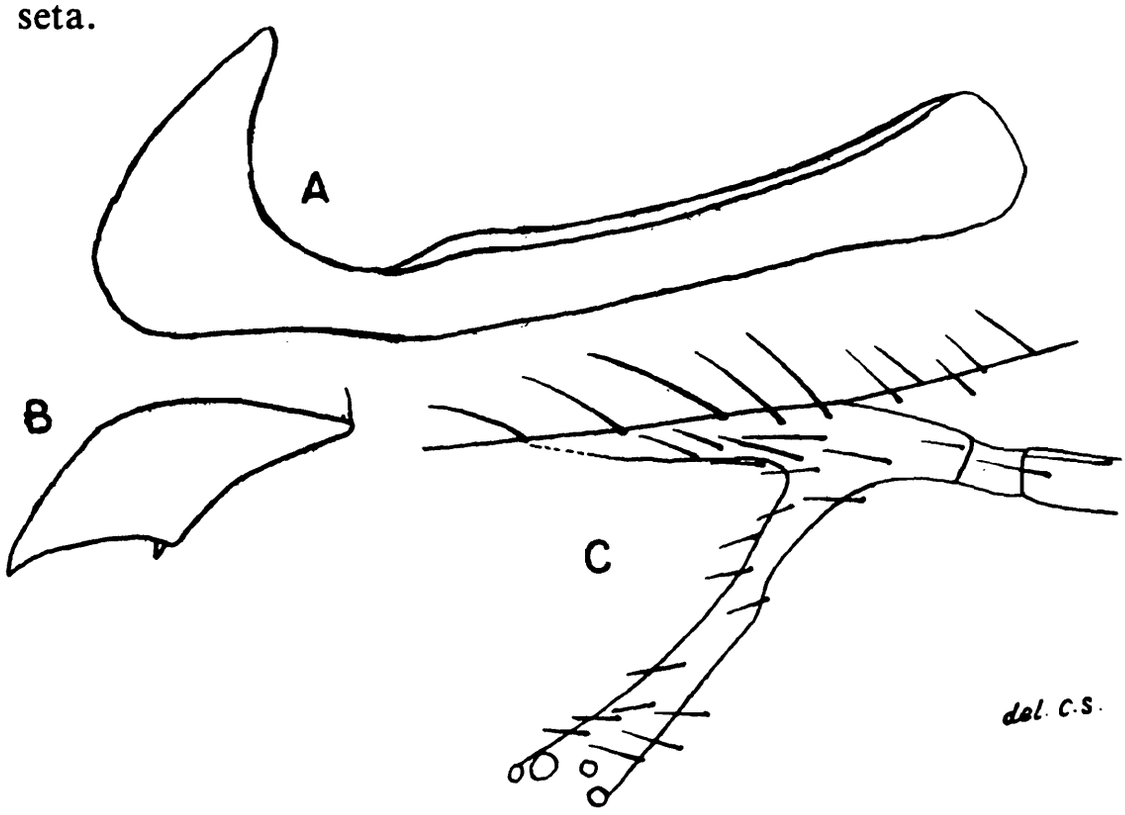

Fig. 166. *Alamella flava* Agarwal : A. Second valvifer; B. First valvifer; C. Fore wing venation. (*Modified from* Agarwal).

Abdomen subtriangular, yellow above with a blackish tinge on sides and below; ovipositor concealed; cercal plates start from near the base.

Male : Length 0.94 mm. Like female except for the antennal characters already pointed out.

Type locality : Kanchipuram.

Distribution : Kanchipuram, Ranipet, Shencottah, Mandi, Rukadi, Mukerian, Hissar, Panipat.

Hosts : Nipaeccoccus vastator and *Eriococcus greeni* Newst.

Anagyrus Howard

1875 *Blastothrix* (partim), Mayr, *Verh. zool.-bot. Ges. Wein,* 25 : 697.
1896 *Anagyrus,* Howard, *Proc. US nat. Mus.,* 18 : 638.
1904 *Anagyrus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 294.
1909 *Anagyrus,* Schmiedeknecht, *Gen. Ins.,* 97 : 201.
1913 *Epidinocarsis,* Girault, *Arch. Naturg.,* 12 : 83.
1921 *Anagyrus,* Mercet, *Fauna Iberica,* 132.
1924 *Anagyrus,* Timberlake, *Pub. Ent. Calif. Univ.,* 3 (2) : 224.
1928 *Anagyrus,* Ishii, *Bull. Imp. Agr. Expt. Sta. Japan,* 3 (2) : 84.
1938 *Anagyrus,* Mani, *Cat. Indian Ins.,* 23 : 86.
1939 *Anagyrus,* Compere, *Bull. Ent. Res.,* 30 (1) : 3-7.
1941 *Anagyrus,* Timberlake, *Occas. Papers. B.P. Bishop Mus.,* 16 (9) : 218.
1947 *Anagyrus,* Compere, *Pub. Ent. Calif. Univ.,* 8 (1) : 20.
1953 *Anagyrus,* Hoffer, *Ochr. Prirody,* 8 (4) : 84.
1956 *Anagyrus,* Tackikawa, *Mem. Ehime Univ. Sect.,* 6, 1 (2) : 138, 147.
1968 *Anagyrus,* Trjpitzin, *Trud. Vses. Ent. Obshch.,* 52 : 90.
1969 *Anagyrus,* Graham, *Polsk. Pismo. Ent.,* 39 (2) : 219.
1970 *Anagyrus,* Subba Rao, *Beitr. Ent.,* 20 (1-2) : 85-96.
1975 *Anagyrus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 9.
1979 *Anagyrus,* Krombein *et al.,* Hymen. N. America, 1 : 913.
1979 *Anagyrus,* Hayat, *Orient. Ins.,* 13 (1-2) : 167.

Female : Body dull coloured; mandible bidentate; maxillary palpi long, with 4 segments, labial palpi with 3 segments; frons generally equal to eye or slightly shorter; ocellar triangle equilateral; lateral ocelli close to eye; eyes large, ovate, pubescent; antennae inserted close to the mouth; scape foliaceously laminate; pedicel equal or almost equal to first funicular segment; funicular segments cylindrical; club triarticulate, stout.

Parapsidal furrows absent; mesonotum densely setose; axillae contiguous or nearly so; scutellum flat, triangular; propodeum elongate in the middle and laterally wide; fore wing large, hyaline; speculum well developed; vein *sm* well separated from margin, vein *m* short or very short; *pm* short or absent; *st* longer than *m*; middle tibial spur stout, equal to metatarsus; hind tibial spur double; abdomen triangular; strongly elongate apically; ovipositor concealed.

Male : Antennae inserted on level of lower orbital border; scape more or less compressed, equal to first funicular segment; pedicel globose or subglobose; funicular segments cylindrical, elongate, with long verticillate hairs; club entire, lanceolate, subequal to 2 preceding segments combined; abdomen truncate.

Type-species : Anagyrus greeni Howard

Key to Species

1.	Females	2
	Males	27
2.	Vein *pm* shorter than *st,* at the most subequal, but never longer. Sometimes absent	3
	Vein *pm* longer than *st*	24
3.	Vein *pm* absent	*Anagyrus bohemani* (Westw.)
	Vein *pm* present, but shorter than *st*	4
4.	Vein *m* shorter than *pm* and *st* combined	6
	Vein *m* distinctly longer than *pm* and *st* combined	5
5.	Antennae black, except for the subapical transverse band on scape; pedicel subequal to the first funicular segment, which latter is 3 times longer than thick; sixth segment 2 times longer than thick	*Anagyrus longipennis* Shafee *et al.*
6.	Pedicel distinctly longer than the first funicular segment	7
	Pedicel not longer than the first funicular segment	20
7.	Frontovertex shorter than scape	8
	Frontovertex equal to or longer than scape	16
8.	Thorax not black	10
	Thorax dark, black	9
9.	Scape about 2 times as long as wide; first funicular segment infuscate at base, 1.50 times as long as thick; sixth funicular segment as long as thick; vein *st* longer than *m* and *pm*	*Anagyrus nigricorpus* Shafee *et al.*
10.	Thorax largely orange-yellow to brown	*Anagyrus longiventris* Hayat
	Thorax largely ferruginous-brown	11
11.	Only the first funicular segment usually black	12
	First 2 funicular segments black; all segments subequal; scape a little more than 2 times as long as wide	*Anagyrus almoriensis* Shafee *et al.*
12.	Veins *m* and *pm* shorter than or equal to *st*	13
	Veins *m* and *pm* longer than *st;* scape a little more than 2 times longer than wide	*Anagyrus sawadai* Ishii
13.	Vein *pm* shorter than 0.50 of *m*; veins *m* and *pm* equal to *st*	15

Vein *pm* longer than 0.50 of vein *m* and *pm* equal to *st*; speculum interrupted by 6 rows of setae, the hairless part about 2 times its width — 14

14. Club white — *Anagyrus amoenus* Compere

Club brown — *Anagyrus comperei* Subba Rao

15. Vein *pm* about 0.33 of vein *m*; club much shorter than the preceding 3 segments combined; terminal palpal segment 3 times longer than thick; scutellum with median longitudinal brown band extending to the basal 0.50 — *Anagyrus scutomaculatus* Agarwal

Vein *pm* vestigial, hardly 0.14 of *m;* club equal to the preceding 3 segments combined — *Anagyrus citri* Agarwal

16. First funicular segment equal to or longer, but never shorter, than the following segments; veins *m* and *pm* distinctly longer than *st* — 17

First funicular segment shorter than the following segment; veins *m* and *pm* shorter than *st*. — *Anagyrus nigroradiclatus* Subba Rao & Rai

17. Thorax impunctate — 19

Thorax densely punctate — 18

18. Vein *pm* less than 0.50 of *m*; labial palpi with 3 segments — *Anagyrus diversicornis* Mercet

Vein *pm* 0.66 of *m*; labial palpi with only 2 segments — *Anagyrus punctulatus* Agarwal

19. Scape about 2 times as long as wide; first funicular segment more than 2 times longer than thick; club equal to the preceding 3 segments combined; vein *m* equal to *pm*; veins *m* and *pm* subequal to *st* — *Anagyrus sacchariicola* Timberlake

Scape about 2.50 times longer than wide; first funicular segment less than 2 times longer than thick; club shorter than the preceding 3 segments combined; vein *m* slightly longer than *pm*; veins *m* and *pm* longer than *st* — *Anagyrus aligarhensis* Agarwal

20. Pedicel equal to or only very slightly shorter than the first funicular segment — 21

Pedicel about 0.50 of the first funicular segment; club yellowish-brown; vein *m* equal to *pm*, vein *st* longer than *m* and *pm* — *Anagyrus alami* Hayat

21. Fore tibia without a fuscous transverse band — 22

Fore tibia with 2 transverse fuscous bands; first funicular segment a little less than 2.50 times longer than thick; scape more than 2 times longer than wide; vein *pm* short, a little over 0.33 of *m;* middle tibial spur shorter than metatarsus; tip of tibia with a row of 8 pegs — *Anagyrus tibimaculatus* Agarwal

22. Pedicel equal to the first funicular segment, which latter is 2 times as long as thick; club shorter than the preceding 3 segments combined; vein *pm* short, less than 0.50 of *m*; vein *st* longer than *m* and *pm* — *Anagyrus flavidus* Agarwal

Pedicel slightly shorter than the first funicular segment, which latter is 3 times as long as thick; club equal to the preceding 3 segments combined; vein *pm* more than 0.50 of *m*; vein *st* shorter than *m* and *pm* — 23

23. Club brown — *Anagyrus indicus* Shafee *et al.*

Club black-tipped — *Anagyrus greeni* Howard

Club segments 2-3 white — *Anagyrus agraensis* Saraswat

Club entirely white — *Anagyrus anamalaianus* Mani & Kaul

24. Scape 3 times as long as wide — 25

Scape less than 3 times as long as wide — 26

25. First funicular segment shorter than pedicel — *Anagyrus shahidi* Hayat

First funicular segment longer than pedicel — *Anagyrus swezeyi* Timberlake

26. Scape 2 times as long as wide; pedicel subequal to the first funicular segment; funicular segment one and 2 slightly more than 3 times and the third segment 3 times longer than thick; club shorter than the preceding 3 segments combined; vein *m* longer than *st* — *Anagyrus mirzai* Agarwal

Scape less than 2 times longer than wide; pedicel distinctly longer than the first funicular segment; funicular segments one and 2 about 2 times and the third segment less than 2 times longer than thick; club subequal to the preceding 3 segments combined; vein *m* shorter than *st* — *Anagyrus gunturiensis* Shafee *et al.*

27. Genitalia with digitus volsellaris well-developed, long, slender and each digitus provided with 2 long denticles; vein *m* and *pm* combined longer than *st* — 28

Genitalia without digiti; venation different, but usually the vein *st* longer than *m* and *pm* combined — 29

28. First funicular segment not longer than second segment, sixth funicular segment without conidia-like organs; vein *pm* longer than *m* or vein *st*, scape with dorsal 0.50 brownish; middle and hind coxae brownish — *Anagyrus mirzai* Agarwal

First funicular segment longer than second segment; sixth funicular segment with a row of conidia-like organs; vein *pm* as long as *m*, shorter than *st;* scape brownish in middle, the brown continues to apex on dorsal side leaving a small ventral area whitish; only hind coaxe dusky — *Anagyrus indicus* Shafee *et al.*

29. Sixth funicular segment and club with conidia-like organs; vein *st* longer than *m* and *pm* combined — 30

Club without such organs; vein *st* shorter than the combined lengths of *m* and *pm* — *Anagyrus longiventris* Hayat

30. Body evidently depressed and elongate as in the female and abdomen as long as head and thorax combined; first funicular segement about 5 times as long as wide and a third longer than second funicular segment — *Anagyrus punctulatus* Agarwal

Body normal, not depressed or elongate and abdomen not longer than thorax; first funicular segment about 2.50 times longer than wide and slightly longer than second funicular segment — *Anagyrus aligarhensis* Agarwal

Anagyrus longipennis Shafee, Alam & Agarwal

(Fig 167)

1975 *Anagyrus longipennis,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 16

Female : Body yellow; head orange-yellow; antennae black except for the subapical white cross band on scape; legs whitish-yellow with dusky or brown; fore coaxe on outer aspect, femora on both margins, tibiae at base; middle femora on outer margin, tibia at base and on outer margin; hind coaxe yellowish-brown, femora on both sides dusky.

Head less than 2 times as wide as long; frontovertex with brown hairs; eyes thickly hairy; gena shorter than eye; scape 2 times as long as thick; pedicel a little less than 3 times as long as thick, subequal to first funicular segment; funicular segment longer than thick; first segment 3 times and sixth segment 2 times as long as thick; club shorter than the preceding 3 funicular segments combined.

Middle of pronotum, front margin of mesocutum, apex of scutellum with 4 pairs of long, brown setae; rest of thorax with pale brown hairs; fore wings hyaline, 3 times longer than wide; costal cell narrow; speculum interrupted behind by 5 rows of discal cilia; vein *m* nearly 4 times longer than *pm* and about 2 times longer than *st;* marginal fringe short; middle tibial spur longer than metatarsus; tip of tibia and tarsal segments 1-4 with 6, 9, 5, 6 and 4 pegs respectively.

Abdomen longer than thorax.

Type locality : Kottayam (South India)

Distribution : India

Host : mealy bug.

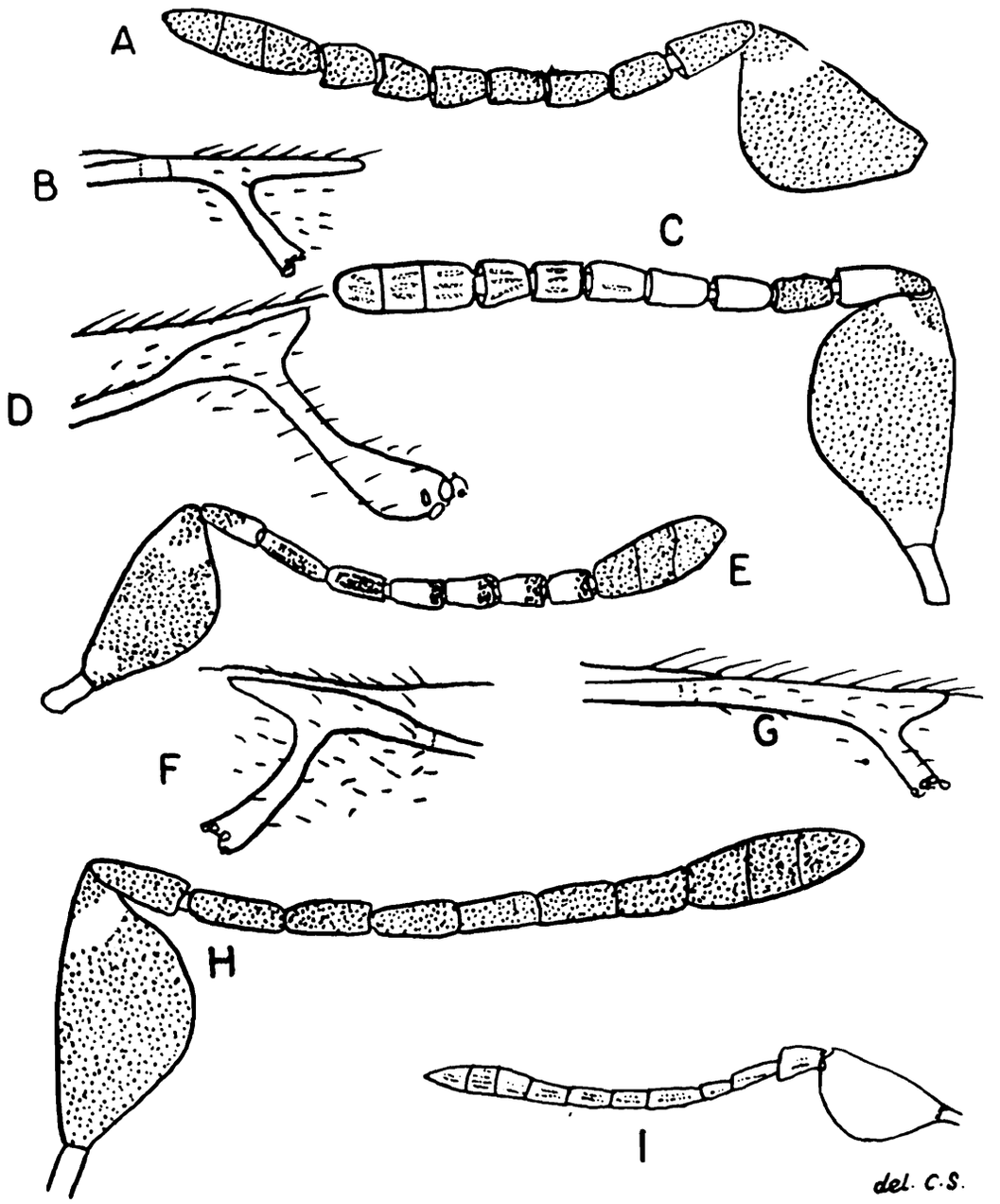

FIG. 167. A.B. *Anagyrus gunturiensis* Shafee *et al.*, female : A. Antenna; B. Stigmal venation; C-D. *Anagyrus scutomaculatus* Agarwal : C. Antenna; D. Stigmal venation; E-F. *Anagyrus indicus* Shafee *et al.*, female : E. Antenna, F. Stigmal venation; G-H *Anagyrus longipennis* Shafee *et al.* : G. Vein *st;* H. Antenna, female; I. *Anagyrus flavidus* Agarwal : Antenna. (Modified from different authors).

Anagyrus nigricorpus Shafee, Alam & Agarwal

(Fig. 171)

1975 *Anagyrus nigricorpus,* Shafee *et at., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 11.

Female : Length 2.02 mm. Body black; head brown; lower part of face darker; ocelli white; radicle, scape except semi-circular area

at tip, basal 0.50 of pedicel and basal 0.33 of the first funicular segment dark, rest white; thorax black; wings hyaline; fore legs orange-yellow except laterally on femora and tibiae which are infuscate; middle and hind legs white; hind coaxe infuscate; abdomen dark.

Head slightly wider than long in front; ocellocular space less than ocellar diameter, ocelloccipital space subequal to ocellar diameter; eyes large, sparsely setose; gena slightly shorter than eye; antennae inserted near mouth; prominence between antennal sockets 0.50 of the width of frontovertex; mandibles bidentate, teeth acute; maxillary and labial palpi 4 and 3 segmented respectively; scape slightly less than 2 times longer than thick, longer than first funicular segment; funicular segment 1-3 subequal and 1.50 times longer than thick, segments 4-5 slightly longer than thick, sixth as long as thick; club 2.50 times longer than thick, shorter than preceding 3 funicular segments combined.

Pronotal front margin concave in middle, hind margin convex and with a submarginal ridge; scutum slightly less than 2 times wider than long; axillae triangular and slightly separated in middle; scutellum distinctly wider than long and about as long as scutum; fore wings slightly more than 2 times longer than wide; costal cell broad; vein *sm* long and with 25 long setae; vein *m* quadrate; *pm* short; vein *st* longer than *m-pm* combined; speculum not reaching wing margin; fringe short; middle tibial spur shorter than metatarsus; 8 pegs at apex of tibial rim.

Abdomen slightly longer than thorax; ovipositor concealed; subgenital plate concave anteriorly and with anterolateral apodemes; first valvifers semi-circular, with one of the articular knobs well developed; outer plates of ovipositor narrow at base, broad at apex with a narrow curved prolongation.

Male : Like female except in the following : Prominence between toruli 0.25 of width of frontovertex; antennae inserted on level of lower orbital border; malar space slightly longer than eye; radicle, apical 0.25 of scape and pedicel dark, rest of antenna white; scape slightly more than 2 times longer than thick; pedicel slightly thicker than long, shorter than 0.50 of first funicular segment; funicle 6 segmented, segments distinctly longer than thick, with whorls of long hairs; club long, entire, equal to the preceding 2 funicular segments combined.

Type locality : Bangalore

Host : Peliococcus on *Prosopis spicigera*

Anagyrus almoriensis Shafee, Alam & Agarwal

(Fig. 169)

1975 *Anagyrus almoriensis,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 13.

Female : Length 1.89 mm. Body yellowish-brown; basal 0.60 of pedicel, first and second funicular segments dark; club brown; scape slightly more than 2 times longer than thick; funicular segments 1-6 subequal, segments 1-2 about 2 times as long as thick; segments 3-6 gradually thicker distad and slightly less than 2 times longer than thick; club slightly more than 3 times longer than thick, shorter than the preceding 3 funicular segments combined; axillae contiguous; vein *m* slightly more than 3 times longer than thick, longer than *pm;* 6 stout pegs at apex of mid tibial rim.

Type locality : Almora

Host : Nipaecoccus vastator

Anagyrus sawadai Ishii

(Fig. 170)

1928 *Anagyrus sawadai,* Ishii, *Bull. Imp. agric. expt. Sta. Japan,* 3 (2) : 88.

1975 *Anagyrus sawadai,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 15.

I have not seen specimens of this species and not also been able to get the original description by Ishii.

Type locality : Japan

Distribution : Japan; India : Aligarh

Host : Rostrococcus iceryoides (Green) on *Mangifera indica* Linn.

Anagyrus amoenus Compere

(Fig. 169)

1939 *Anagyrus amoenus,* Compere, *Bull. ent. Res.,* 30 : 1-13.

1970 *Anagyrus amoenus,* Subba Rao, *Beitr. Ent.,* 20 (1-2) : 87.

Female : Length 1.26 mm. Frontovertex orange-yellow, with blackish tinge near the occipital margin; face and gena blackish; base of scape with a narrow black ring with white patch above and below; upper 0.33 of scape whitish with slight blackish tinge at the segment; basal 0.33 of pedicel black, rest whitish; radicle black; first funicular segment black; following segments white; club dull white; thorax dull yellow, without black; pronotal front margin white, with a little black in the middle extending to hind margin; middle legs whitish or light yellow with slight dark shades on the margin of femur and tibia which are not so conspicuous; abdomen black.

Frontovertex wider than long; ocellar triangle equilateral; ocellocular space equal to ocellar diameter; scape well expanded, with stout bristles on the outer margin; first funicular segment 0.75 of

a pedicel, narrow, shortest, the following funicular segments longer and slightly thicker towards apex; club with 3 segments shorter than the preceding 3 funicular segments combined; mandibles long, bidentate; maxillary and labial palpi with 3 and 4 segments respectively.

Thorax completely covered with short hairs, with 2 bristles; anterior margin straight, posterior margin with a deep groove; vein *sm* about 0.50 of wing; vein *m* short, *pm* vestigial, *st* narrow and slightly expanded apically; a clear spot extending to middle of the wing from base of *st;* middle tibial spur about 0.75 of metatarsus.

Abdomen shorter than head and thorax combined, broader at base and tapering broadly at apex; ovipositor slightly exserted; wings reaching beyond apex of abdomen.

Type locality : Africa

Distribution : India : Nangloi, Delhi; Africa

Host : Unidentified coccid on *Casuarina equisetifolia*

Anagyrus scutomaculatus Agarwal

(Fig. 167)

1965 *Anagyrus scutomaculatus,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 49.

1975 *Anagyrus scutomaculatus,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 18.

Female : Length 1.40 mm. Head : width of the interscrobal area less than the width of frontovertex; club distinctly shorter than the preceding 3 segments combined; 3 times longer than thick.

Thorax with black markings along front margin of mesoscutum, margins of axillae, median line on scutellum more pronounced than in other species; hind margin of pronotum with 50 strong setae; mesopostphragma rounded apically; vein *sm* with 25 setae, vein *pm* about 0.33 of the *m,* veins *m : pm : st* ratio 3.3 : 1 :7.5; tip of middle tibiae with 10 pegs; metatarsus, tarsal segments 2-4 with 10, 9, 7 and 5 pegs respectively; middle tibial spur shorter than metatarsus.

Type locality : Aligarh

Distribution : Almora (Kumaon Himalaya), Karnool, Gundalur, Digvameta, Motihari, Arakonam, Mysore, Bangalore

Hosts : Nipaecoccus vastator, Pseudococcus sp. on *Cirtrus aurantifolia* S.

Anagyrus citri Agarwal

(Fig. 168)

1965 *Anagyrus citri,* Agarwal, *Acta Hym., Tokyo,* 2 (2) : 48.

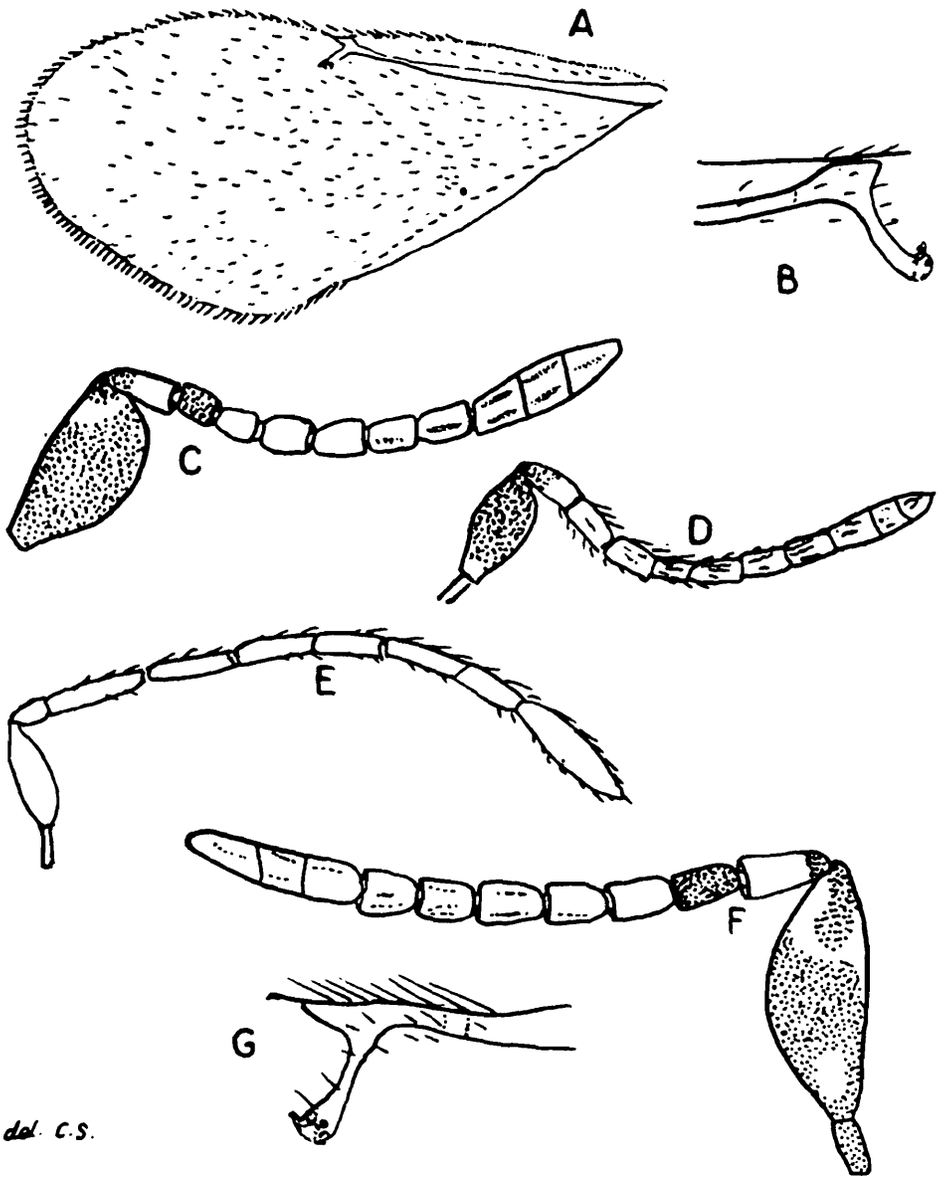

FIG. 168. A-C. *Anagyrus bohemani* (Westwood), female; A. Fore wing; B. Vein *st;* C. *Antenna;* D. *Anagyrus citri* Agarwal, female; Antenna; E-G. *Anagyrus comperei* Subba Rao : E. Antenna, male; F. Antenna, female; G. Vein *st. (Modified from different authors).*

The female differs from *A. mirzai* Agarwal in the following :

Female : Length 1.60 mm. Basal 0.33 of pedicel and the first funicular segment dark brown, apical 0.33 of pedicel, remaining funicular segments and club white; abdomen orange-yellow, dark near base on the dorsum over cercal plates, on sides and near apex; pedicel longer than first funicular segment; first funicular club equal to preceding 3 segments combined, 2.50 times longer than thick.

Pronotum without a submarginal ridge along hind margin; mesopostphragma notched apically; vein *sm* with 16 setae; veins *m* and *pm* very short, vein *pm* 0.14 of *m;* veins *m : pm : st* ratio

9 : 1 : 14; tip of the middle tibiae with 8 pegs; metatarsus, second, third and fourth tarsal segments with 10, 7, 6 and 4 pegs respectively.

Abdomen longer than head and throrax combined.

Type locality : Aligarh

Host : Endoparasites of *Pseudococcus citri* Risso on *Citrus medica* L.

Anagyrus nigroradiclatus Subba Rao & Rai

(Fig. 170)

1970 *Anagyrus nigroradiclatus,* Subba Rao & Rai, *Beitr. Ent.* 20 : 94.

1975 *Anagyrus nigroradiclatus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 16.

Female : Length 0.96-1.51 mm. Body brown; head yellow, face and scrobe pale yellow; gena and occiput blackish-brown; scape brown except for the white semi-lunar spot subapically; pedicel and first funicular segment brown; rest of antennae white; thorax brown; legs whitish-yellow; distal 3 segments of fore tarsi dusky; abdomen brown.

Frontovertex with silvery-white hairs; more than 0.33 of head width, a little longer than wide; eyes distinctly hairy; ocellar triangle obtuse; ocellocular and ocelloccipital spaces subequal; gena shorter than eye; toruli spaced by a distance equal to 1.50 times their own diameter and about 0.50 of their diameter from facial margin; scrobes triangular, broadly meeting above; mandibles bidentate; maxillary palpi with 4 and labial palpi with 3 segments; scape flattened, expanded beneath, 2 times as long as thick; pedicel about 2 times as long as thick, equal to the preceding 2 segments combined; first funicular segment shortest, as long as thick, remaining segments longer than thick; club 3 segmented, slightly longer than the preceding 3 funicular segments combined.

Anterior scuto-axillary sutures dusky, scutellum with a small dusky patch in the middle; apex with 2 pairs of long brown setae, rest of dorsum with white setae; pronotum of almost uniform width, front margin concave, hind margin convex; scutellum slightly longer than mesoscutum, somewhat wider than long; mesopostphragma with a notch at apex; fore wings slightly more than 2 times as long as wide; vein *m* : *pm* : *st* ratio 3 : 1 : 5 : marginal fringe very short; middle tibial spur shorter than metatarsus.

Abdomen longer than thorax; cercal plates situated at basal 0.25; subgenital plate boat-shaped, posterior margin slightly notched, mid-longitudinal groove and antero-lateral apodemes present; second valvifers with a ridge along dorsal margin; first valvifers shaped an elongated triangle; outer plates of ovipositor with a ridge along dorsal margin; ovipositor concealed.

Male : Length 0.84 mm.

Type locality : Delhi

Distribution : Delhi; Jogindernagar

Hosts : *Ferrisia virgata* Ckll. and *Nipaecoccus vastator* on *Zizyphus*

Anagyrus punctulatus Agarwal

(Fig. 170)

1965 *Anagyrus punctulatus,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 50.

1979 *Anagyrus punctulatus,* Hayat, *Orient. Ins.,* 13 (1-2) : 181.

Female : Length 1.76 mm. Head largely orange-yellow; ocelli red; eyes silvery along rims, dark in the middle; space between eyes and antennal sockets; cheeks and postocciput fumate; scape white at base and apex, otherwise black base of pedicel and first funicular segment completely brown; tip of pedicel, funicular segments 2-3 whitish, remaining funicular segments and club fumate; thorax yellow; pronotum in the middle, sides of scutellum and expanded portion of propodeum fuscous; wings hyaline; fore coaxe dusky-brown, rest of leg whitish with slight black towards the margins; middle and hind legs colour as fore legs; abdomen yellowish-orange.

Head setose; eyes bare; occiput margin acute; head and frontovertex wider than long, width of frontovertex greater than scape and less than eye, ocelli in isosceles triangle; space less than ocellar diameter; cheeks short, much less than eye; antennae close to mouth border, at a distance equal to 0.50 length of an antennal socket from the facial margin; scape more than 2 times longer than thick, subequal to the following segment, first funicular segment about 2 times longer than thick; club 3 segmented, 3 times longer than thick, longer than the preceding 2 segments combined.

Pronotum almost uniform width, front margin broadly and shallowly notched in the middle, hind margin straight; axillae and scutum with dense, punctae, axillae distinctly separated by median posterior projection of scutum; propodum very narrow in the middle; mesopostphragma narrowly truncated and notched at apex; fore wings about 3 times longer than wide; vein *m* small, *pm* well developed, vein *st* slightly curved, longer than veins *m* and *pm* together; marginal fringe comparatively long; hind wing about 5 times longer than wide; marginal fringe long, apex of fore tibiae with a peg opposed to the spur; middle tibial spur shorter than metatarsus; tip of tibiae, metatarsus, second, third and fourth tarsal segments with 6,10,8,7 and 6 pegs respectively.

Abdomen longer than head and thorax combined; ovipositor 0.25 of abdomen; cercal plates at basal 0.33; subgenital plate tapering behind, posterior margin notched in the middle, mid longitudinal groove extends up to 0.33 length of pale; first valvifers semi-circular,

base straight, articular knobs little prominent; second valvifers long and narrow; third valvifers 6 times longer than wide, rounded at apex.

Male : Like female except for the following :

Length 1.30 mm. Pedicel light brown, funicle and club light yellow; scape about 3 times longer than wide; pedicel short; funicular segments much longer than thick, subequal with the exception of first segment which is 5 times longer than thick and almost 2.50 times longer than pedicel; club long, unsegmented, more than 5 times longer than thick and equal to the preceding 2 segments combined; 7 scales on the sixth funicular segment and 2 near the base of club, broad at apex; funicle and club with long bristles.

Type locality : Aligarh

Host : Endoparasite of *Saccharicoccus sacchari* (Ckll.) on *Saccharum officinarum* L.

Anagyrus saccharicola Timberlake

1931 *Anagyrus saccharicola,* Timberlake, *Proc. Hawaii. ent. Soc.,* 8 (1) : 159.
1939 *Anagyrus saccharicola,* Mani, *Indian J. Ent.,* 1 (1 & 2) : 71.
1940 *Anagyrus saccharicola,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 13.

Female : Length 1.22-1.75 mm. Head and thorax orange-yellow, tegulae and prepectal plates white, oral margin of face very narrowly, occiput, dorsal surface of propodeum and abdomen fuscous or blackish; scape, pedicel and first funicular segment black, following segments white; scape with a narrow oblique band across the apical part, dorsal margin from base to a little beyond the middle and on outer surface from there to tip, groove on exterior side broadly from base to apex, white; apical 0.33 of pedicel white; legs creamy-white, with tarsi, especially middle pair yellowish, dorsal margin hyaline, veins dilute fuscous.

Face dull; very minutely and densely alutaceous, but scrobe, summit of the ridge between antennae and inferior inner margin of eyes shining; mesonotum dull, not quite so densely alutaceous as face; axillae somewhat smooth, apical margin of scutum in the middle and apical margin of scutellum narrowly smooth and shining; pubescence of head and mesonoum extremely fine, short, white, inconspicuous, erect on notum; occipital margin of vertex with a few longer erect fuscous setae, superior inner orbits with a row of about 6 similar setae; metapleura and sides of abdomen with pubescence similar to that of mesonotum, becoming longer, erect but sparser towards apex of abdomen; eyes with a dense erect pubescence, about as long as that of frons.

Head thinly submensiform, distinctly wider than long, with longitudinal curvature in median line, extremely slight from the

occipital margin to a point a little above the anterior ends of eyes; at the latter point the curvature becomes much more abrupt towards the oral margin; eyes moderately large, oval, about 2 times as long as wide, broader at the anterior end; inner orbits very slightly divergent anteriorly and almost parallel above; space between eyes nearly 1.50 times longer than wide; ocellar triangle right-angled, ocelloccipital space equal to ocellar diameter; ocellocular space equal to 2 ocellar diameter; gena scarcely 1.50 times eyes; antennae inserted close to oral margin, sockets being much less than 0.50 as far from oral margin as their distance apart, somewhat less than 0.50 as far from oral margin as the distance from either to the nearest margin of eye; scrobes short, very slightly convergent, united above, ending at a point a little above lower orbital border; separated by a broad convex ridge; scape moderately expanded, rather less than 1.50 times as wide as long, deeply grooved on the outer side between the thickened dorsal margin and the ventral expansion, with the edge of thickened part straight and carinate; pedicel about 3 times as long as thick, distinctly longer than the following segments; flagellum increasing very slightly in thickness towards apex; funicular segments slightly shorter distad; first slightly over 2 times as long as thick, sixth about 1.50 times as long as thick, club almost equal to the preceding 3 segments combined.

Thorax scarcely 1.50 times as wide dorso-ventrally as the greatest width; notum strongly flattened; posterior margin of mesoscutum nearly straight, except that it is slightly produced in the middle to cover the inner end of axillae; axillae considerably more than 2 times as wide as long at outer ends, their inner ends very acute and meeting although concealed by the mesoscutum; scutellum 4-sided, about as wide as long with the apical angle approximately rectangular, basal angle very obtuse and exterior angles rather acute; apex of scutellum not elevated above level of propodeum and fitting into a depression in the middle of the latter; propodeum thus apparently composed of 2 lobes, broad externally and acute mesad where they are separated by the apex of scutellum; their surface slopes ridged on anterior margin, behind which the surface slopes very gently backward; vein *m* about 2 times as long as thick, *pm* subequal *m*, and both together about equal to vein *st;* speculum narrow, almost reaching vein *st* and with an oval cut-off portion below; proximal margin of main portion of speculum bordered with one row of distinctly coarser setae; costal cell with a marginal row of fine seate on the apical 0.50; vein *sm* with about 15-17 bristles.

Abdomen broadly sessile, distinctly longer than head and thorax combined, acute at apex, deeply concave above the base; ovipositor entirely concealed.

Male : Length 0.71-1.09 mm. Body dull black; face on each side of the median ridge ferruginous or orange-brown; scape blackish, with the base excluding radicle, and ventral yellowish-white,

with apex of last tarsal segment dusky; wings hyaline, veins dilute fuscous; sculpture extremely fine and alutaceous, producing an opaque effect, axillae, extreme apical margin of scutellum, pleuron, propodeum and abdomen somewhat shining; face with sparse, very short adpressed whitish setae; frontovertex and mesoscutum with similar more erect, dusky setae, which are hardly visible, except in profile view; scutellum with very sparse, rather long seate and an apical pair of longer bristles; eyes with sparser and slightly shorter pile than in female.

Head subrotund in front, slightly wider than long; frontovertex about 1.50 times broader than long; lateral ocelli very close to occipital margin and nearly 2 times their diameter from margin of eyes; eyes broadly oval, less than 2 times as long as wide and broader at lower end; gena in front nearly continuous with outline of eyes and about as long as eyes; face with a broad, low, rounded, median ridge extending from clypeal margin to a little above antennal sockets, latter situated slightly above lower orbital line; scrobe very short, shallow and uniting above in broad curve; scape only slightly longer than pedicel and first funicular segment combined, narrowly oval, slightly expanded beneath; pedicel hardly longer than thick and about 0.33 of following segment; flagellum elongate-filiform, with rather long scattered hairs; first funicular segment nearly 4 times as long as thick; the following segments subequal and about 0.67 of the first funicular segment; club slightly longer than the last 2 funicular segments combined; sixth funicular segment beneath with a row of 6 conidium-like setae, base of club with one similar seta.

Fore wings much shorter and broader than in the female; speculum also much broader and reaching from vein *st* to opposite margin of disc, except for a slight interruption which cuts off a rounded area touching the posterior margin of wings, basal area of disc with the setae sparser and somewhat coarser than those beyond the speculum; costal cell broader than in female, with one marginal and one incomplete submarginal rows of setae; venation practically as in female.

Abdomen depressed, considerably shorter than thorax and narrowly truncate at apex; cercal plates retracted to the basal 0.33 of length, setae very long.

Type locality : Hawaii

Distribution : Serdang, Selangor, (Federated Malay States) and Los Banos, Luzon, Philippines; Karnal (Punjab); Zululand, Africa.

Host : Trionymus sacchari on *Saccharum officinarum*

Anagyrus aligarhensis Agarwal

(Fig. 169)

1965 *Anagyrus aligarhensis,* Agarwal, *Acta Hym., Tokyo,* 2 : 46, 52-53.
1979 *Anagyrus aligarhensis,* Hayat, *Orient. Ins.,* 13 (1-2) : 179.

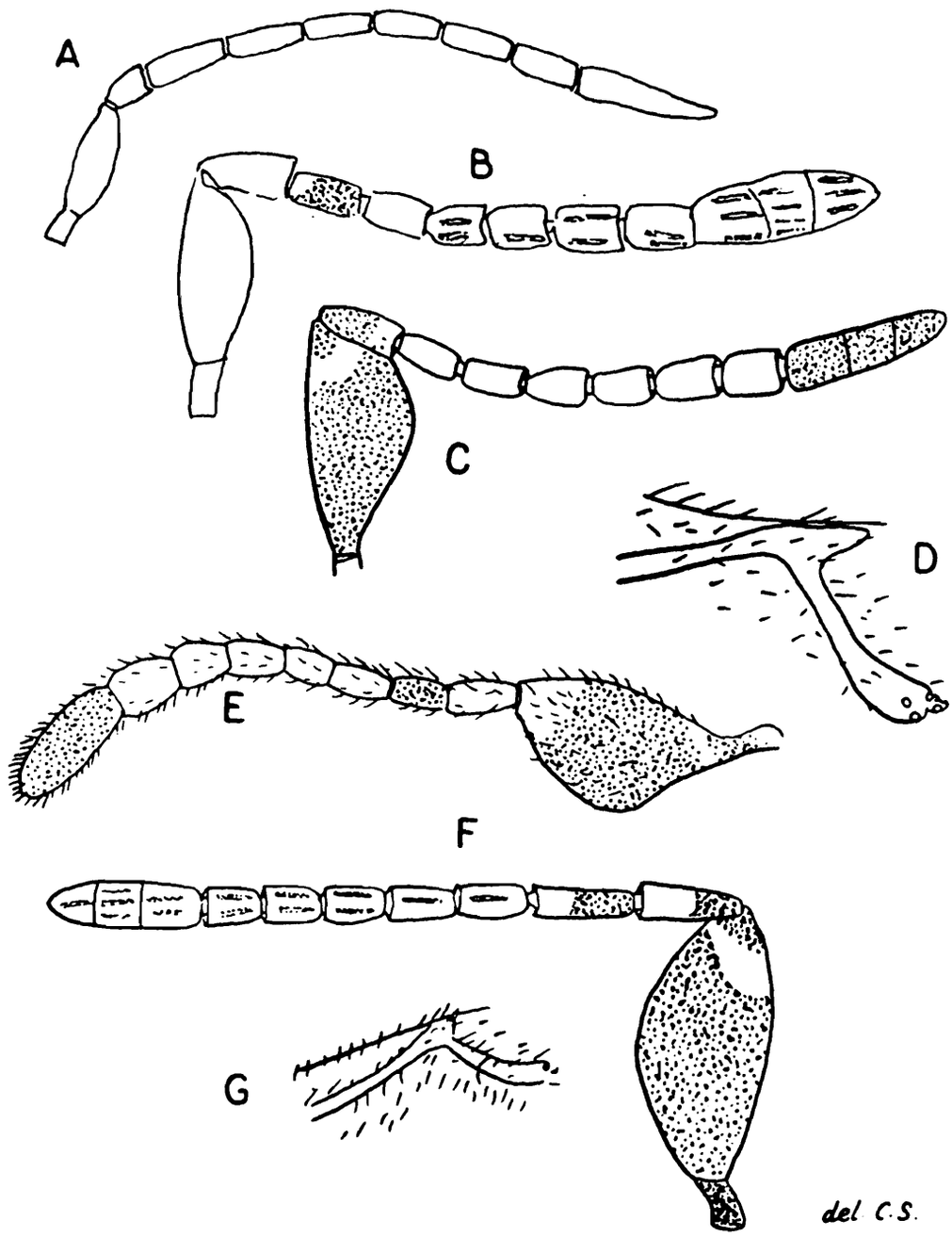

FIG. 169. A.B. *Anagyrus aligarhensis* Agarwal : A. Antenna, male; B. Antenna, female : C-D. *Anagyrus almoriensis* Shafee *et al.*, female : C. Antenna, D. Stigmal venation; E. *Anagyrus amoenus* Compere, female : Antenna; F-G. *Anagyrus tibimaculatus* Agarwal, female : F. Antenna; G. Stigmal venation. *(Modified from different authors).*

Female : Length 1.11 mm. Resembles *A. punctulatus* Agarwal, but differs in the following :

Head orange, occiput with silvery-white hairs; width of frontovertex equal to eye; scape 2.50 times longer than thick, slightly shorter than club; pedicel more than 1.50 times longer than thick.

Margins of scutum, scutellum and axillae fuscous; pronotum narrow in the middle and expanded laterally; axillae narrowly contiguous, scutellum and axillae without punctae; fore wings with vein *m* small, a little longer than *pm;* vein *st* long, expanded at apex, shorter than veins *m* and *pm* together; hind wing marginal fringe long, equal to 0.50 of wing width; fore legs uniformly dusky; middle coaxe black, rest dusky; tip of tibiae, metatarsus, second, third and fourth tarsal segments with 6, 4, 3, 3 and 2 pegs respectively.

Abdomen orange with a little fuscous near base and laterally; ovipositor about 0.10 of abdomen; subgenital plate without a notch in the middle of posterior margin; third valvulae 4 times longer than wide.

Male : Scape 3 times longer than wide, pedicel short, first funicular segment less than 2.50 times longer than thick, 2 times as long as pedicel; club about 5 times longer than thick; sixth funicular segment and base of club with 6 and 3 scales respectively.

Type locality : Aligarh

Host : Endoparasite of *Saccharicoccus sacchari* (Ckll.) on *Saccharum officinarum* L.

Anagyrus alami Hayat

1969 *Anagyrus alami,* Hayat, *Bull. Ent.,* 10 (2) : 112.

Female : Length 1.96 mm. Head yellow, facial margin black, occiput brown; frontovertex finely reticulate with white setae; radicle, scape except a subapical cross band, pedicel dorsally at base blackish-brown; funicle and club brownish-yellow; rest of antenna white; thorax yellow, pronotum with a brown patch in the middle; mesoscutum, axillae and scutellum finely reticulate, metanotum and propodeum smooth; setae on dorsum white; 3 pairs of long black setae on apical third of scutellum; anterior margin of pronotum broadly truncated in middle, posterior margin with a row of short brown setae; mesopostphragma notched at apex; wings hyaline; legs white; abdomen dusky-brown, sides and venter pale yellow.

Head with dorsum 2.50 times wider than long; frontovertex as long as wide; ocellar triangle obtuse; ocellocular and ocelloccipital space less than ocellar diameter; gena shorter than transverse diameter of eye; mandibles bidentate; maxillary and labial palpi 4 and 3 segmented respectively; scape flattened and expanded beneath, nearly 2 times longer than thick; pedicel 1.50 times longer than thick; first funicular segment more than 2 times as long as thick, sixth segment longer than pedicel; club longer than preceding 2 funicular segments combined.

Fore wings more than 2 times longer than wide; veins *m : sm : pm : st* ratio 53 : 3 : 30 : 8; speculum interrupted behind by 5 rows of

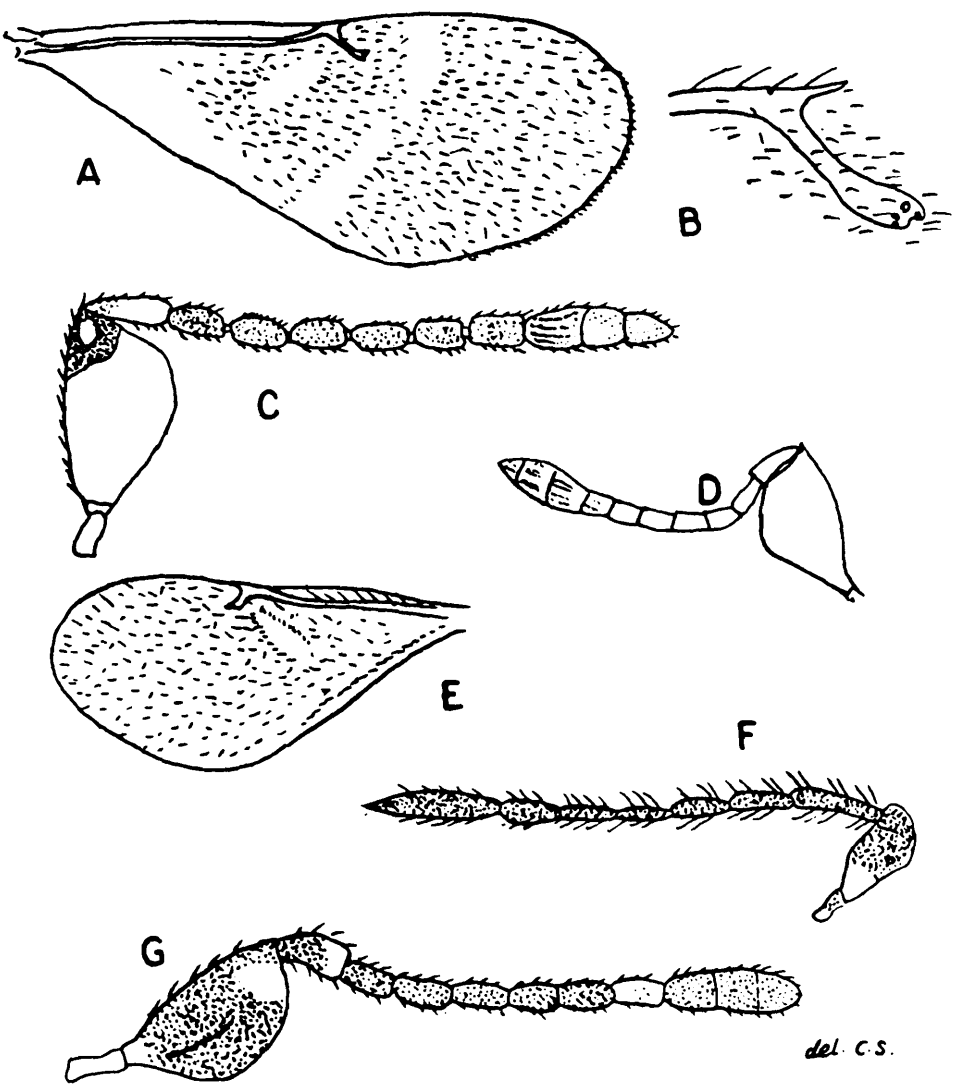

FIG. 170. *Anagyrus nigroradiculatus* Subba Rao & Rai, female : A. Fore wing; B. Stigmal venation; C. Antenna; D-E. *Anagyrus punctulatus* Agarwal : D. Antenna, female; E. Fore wing, male; F-G. *Anagyrus sawadai* Ishii : F. Antenna, male; G. Antenna, female. *(Modified from different authors).*

setae, basal cut-off portion circular; middle metatarsus longer than tibial spur; tibia apically and tarsal segments 1-4 bearing 9, 7, 7, 6 and 5 pegs respectively.

Abdomen longer than thorax; ovipositor hidden; subgenital plate large, slightly truncated, mid-longitudinal groove and anterolateral apodemes present; second valvifers with a ridge on its outer margin, first valvifers triangulate; outer plates of ovipositor with a ridge on its outer margin.

Type locality : Maharashtra : Nasik.

Host : Pseudococcus sp. on *Acacia arabica.*

Anagyrus tibimaculatus Agarwal

(Fig. 169)

1965 *Anagyrus tibimaculatus,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 50.

1975 *Anagyrus tibimaculatus,* Shafee, Hayat & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 20.

Female : Length 1.49 mm. Resembles *A. flavidus* (Agarwal) but can be distinguished as follows :

"First funicular segment brown in the basal 0.50 only; scape more than 3 times longer than wide; pedicel longer than first funicular segment; more than 2 times longer than wide; club wider than funicle, a little less than 3 times longer than wide; anterior margin of the mesoscutum, margins of axillae, median line down the scutellum brownish; fore tibiae with 2 brownish cross bands equidistant from base and apex; middle coaxe with a row of strong setae along apical margin; apex of middle tibiae with a row of 8 pegs; metatarsus, second, third and fourth tarsal segments with 11, 6, 5 and 4 pegs respectively; abdomen longer than head and thorax united."

Type locality : India : Aligarh.

Distribution : India (Kumaon Himalaya):Naini Tal; Haldwani.

Hosts : Planococcus robustus Ezz. & Conn., *Pseudococcus citri* Risso on *Citrus limonium.*

Anagyrus flavidus (Agarwal)

(Fig. 167)

1965 *Anagyrus flavus,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 49 (preoccupied in Ishii, 1928)

1975 *Anagyrus flavidus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 20.

Female : Length 1.38 mm. Resembles *A. citri* very closely, but differs in frontovertex 2.50 times wider than space between toruli; first funicular segment subequal to pedicel, more than 2 times as long as wide, club as thick as funicule, more than 3 times longer than thick, shorter than preceding 3 funicular segments combined; thorax without black markings excepting front margin of mesoscutum; pronotum with 25 setae along hind margin; mesopostphragma rounded apically; vein *sm* with 21 setae; veins *m : pm : st* ratio 2.5 : 1 : 5.5; middle tibial spur shorter than metatarsus, apex of tibiae with a row of 9 pegs, metatarsus, tarsal segments 2-4 with 12, 9, 6 and pegs respectively; abdomen slightly longer than thorax.

Type locality : India : Aligarh

Distribution : India

Hosts : Planococcus robustus Ezz. & Conn. on *Ficus; Pseudococcus* sp. on *Citrus limonium* R.

Anagyrus indicus Shafee, Alam & Agarwal

(Fig. 167)

1975 *Anagyrus indicus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 13.

Female : Length 1.87 mm. Resembles *A. nigricorpus* Shafee *et al.,* except as follows :

Head yellowish-brown; first 2 funicular segments infuscate; club brown; pedicel slightly shorter than first funicular segment; first funicular segment about 3 times longer than thick, segment 3 about 2 times as long as thick, segments 4-6 less than 2 times longer than thick; club slightly more than thick, about as long as the preceding 3 funicular segments combined; thorax orange-yellow; vein *m* 3 times longer than thick, longer than *pm;* combined lengths of veins *m-pm* slightly more than *st;* middle tibial spur subequal to metatarsus; tip of tibia with 9 stout pegs.

Type locality : Quilon

Distribution : Moradabad

Host : Nipaecoccus vastator

Anagyrus mirzai Agarwal

(Fig. 171)

1965 *Anagyrus mirzai,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 46.

1969 *Anagyrus mirzai,* Agarwal, *Indian J. Ent.,* 31 : 48.

1975 *Angyrus mirzai,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 20.

1979 *Anagyrus mirzai,* Hayat, *Orient. Ins.,*13 (1-4) : 184.

Female : Length 1.13 mm. Head yellowish-orange; postocciput black; scape blackish-brown with white lacunar area at apex, funicle and club uniformly dirty orange to brown; thorax orange laterally and behind anterior margin of mesoscutum, axillae and apex of scutellum black, rest of thorax orange; wings hyaline; fore legs light brown, darker towards margins of the femora and tibiae; middle and hind legs concolorous with fore legs; abdomen orange, a little black near base and sides.

Head as wide as long, eyes and space between toruli fuscous; frontovertex longer than wide, width less than length of scape; ocellocullar space less than ocelloccipital space; eyes large; gena shorter than eye; toruli at a distance of about 0.50 of the longitudinal diameter of a socket; maxillary and labial palpi with 4 and 3 segments; scape about 2 times as long as thick, longer than first 3 funicular segments combined; pedicel 2.50 times longer than thick, slightly longer than the following funicular segment, first funicular segment more than 3 times longer than thick; club 3-segmented, more than 2.50 times longer than thick; less than the preceding 3 segments combined.

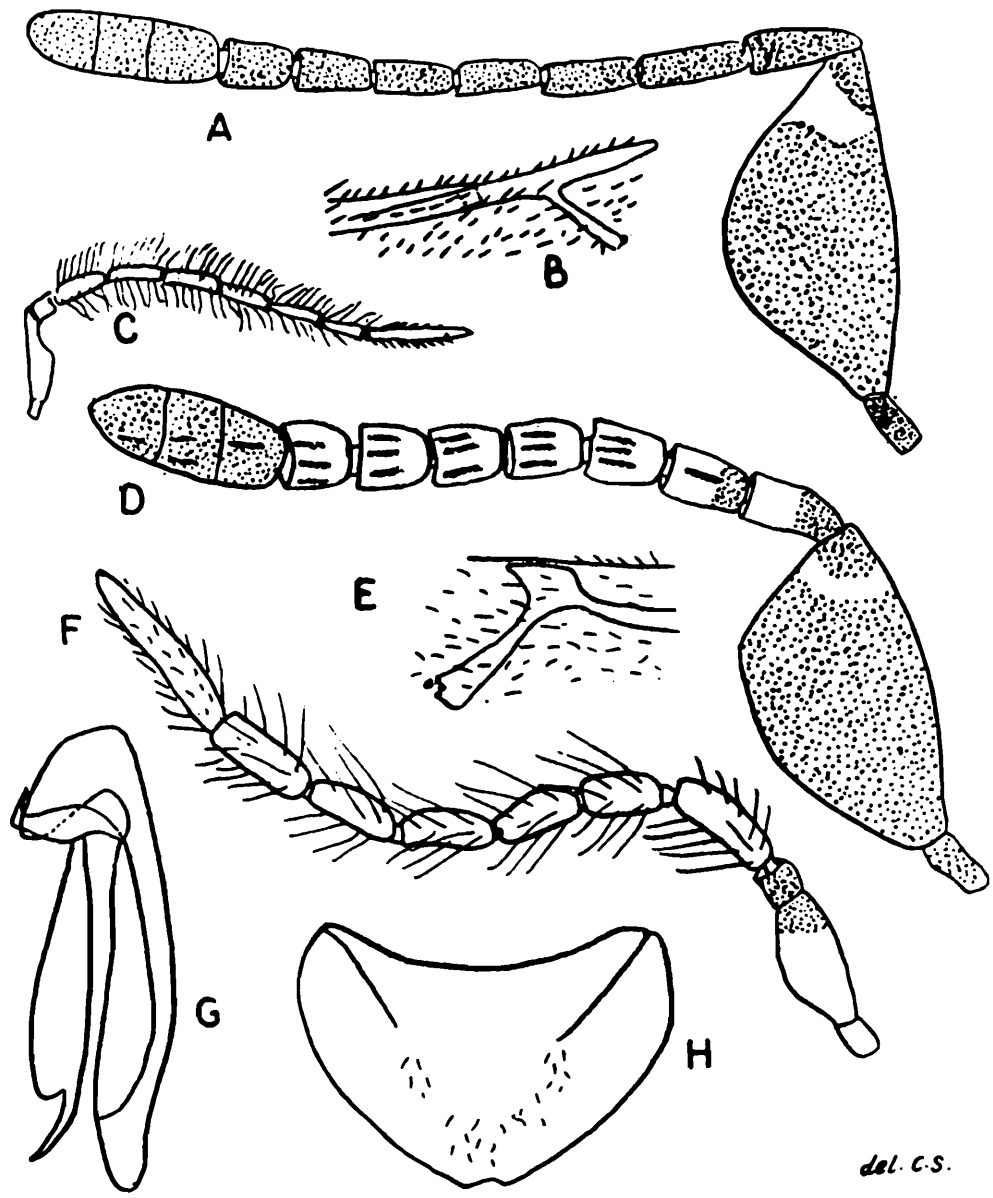

FIG. 171. A-C. *Anagyrus mirzai* Agarwal : A. Antenna, female : B. Stigmal venation, female; C. Antenna, male; D-H. *Anagyrus nigricorpus* Shafee *et al.* : D. Antenna, female; E. Stigmal venation, female; F. Antenna, male; G. External genitalia, female; H. Subgenital plate, female.

Pronotum infumate in the middle; with anterior margin deeply, acutely notched in the middle, posterior margin with a submarginal ridge, broken in the middle; axillae broadly contiguous; fore wings 2.50 times longer than wide; costal cell broad; vein *m* longer than vein *st* and shorter than vein *pm, pm* longer than either, marginal fringe short, spaced by a distance equal to 0.25 length of fringe; hind wings fringe short, spaced by a distance equal to 0.25 length of a fringe; middle tibial spur equal to metatarsus, apex of tibia with 10 pegs; metatarsus, tarsal segments 2-4 with 14, 7, 6, and 4 pegs respectively.

Abdomen subtriangular, slightly shorter than thorax; subgenital plate broad at base, narrowing towards apex with a notch in the middle of posterior margin; mid-longitudinal grooves complete; anterolateral apodemes present; outer plates of ovipositor broad basally, narrow distally with a mid-longitudinal ridge extending the length of plate; first valvifers semi-circular, straight base and prominent articular knobs; second valvifers with thickened dorsal margin, third valvulae imperceptibly continued with second valvifer, subconical.

Male : Length 0.94 mm. Like female except for the following :

Scape slightly expanded, less than 4 times longer than thick; pedicel short, slightly longer than thick, less than 0.50 of the following segment; funicular segments elongate, gradually thicker and shorter, more than 2.50 times longer than thick; club unsegmented, less than 6 times longer than thick, shorter than preceding 3 segments combined.

Veins *pm* and *st* subequal; vein *m* shorter than either

Type locality : Aligarh

Distribution Aligarh and Nellore

Hosts : Endoparasite of *Pseudococcus citri* Risso on *Citrus medica* L and *Nipaecoccus vestator* (Maskell.)

Anagyrus gunturiensis Shafee, Alam & Agarwal

(Fig. 167)

1975 *Anagyrus gunturiensis,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 15.

Resembles *A. nigricorpus* Shafee *et al.,* except in the following characters :

Female : Length 1.40 mm. Head yellow; ocelli red, in equilateral triangle; ocellocular space less than ocellar diameter and occipitalocellar space; antennae dark brown except dark scape; 2 basal funicular segments 2 times as long as thick; club 3.50 times longer than thick, as long as preceding 3 funicular segments combined.

Thorax yellowish-brown; scape less than 2 times as long as wide; pedicel distinctly longer than the first funicular segment; funicular segments 1-2 about 2 times and 3 less than 2 times longer than thick; vein *m* shorter than *st; pm* longer than *st.*

Type locality : Guntur

Host : Nipaecoccus vastator

Anagyrus longiventris Hayat

1979 *Anagyrus longiventris,* Hayat, *Orient. Ins.,* 13 (1-2) : 173.

Female : Length 1.23-1.65 mm. Body dark brown to brownish-yellow with orange-yellow, yellow or whitish in parts; frontovertex dark brown with dark yellow bands round eyes, dark brown continuing on front to toruli and merging with the dark bands between toruli and lower orbital margin; temples and gena, behind yellowish band round eyes, black; occiput mostly black; tips of mandibles black; pronotum with lateral and posterior margins silvery-white, centrally with a largely blackish-brown patch from which are given off narrow blackish-brown bands to posterolateral angles, rest of pronotum brownish-yellow to orange-yellow; mesoscutum, axillae and scutellum orange-brown to dusky-brown with a longitudinal band on mesoscutum and a spot on scutellum concolorous with head dorsum; metanotum orange-yellow with brownish suffusions; propodeum blackish-brown; prepectus white; mesopleura orange-yellow, slightly dusky; tegulae white with a subtriangular patch in distal 0.50 brown, abdomen dusky to brownish-black with the eighth tergum orange-brown; ovipositor, radicle, scape except basal and subapical whitish bands, proximal 0.66 of pedicel and first funicular segment dark brown to nearly black; funicular segments 3-5 and club brownish-yellow; second funicular segment whitish to pale yellow, but may be dusky-yellow in some specimens; wings hyaline, veins brown; setae on vein *sm* dark borwn; legs creamy-white to pale yellow freely suffused with dusky; fore tarsi and hind coxae dusky; fore and middle coxae, fore tibiae and hind femora suffused with dusky; both margins of all femora nearly black; middle and hind tibiae brown at base and slightly dusky in basal third; smaller specimens tend to be increasingly pale brownish-yellow to pale brown, head dorsum almost wholly brownish-yellow, thorax pale brown to almost reddish-orange-brown, propodeum pale brown at sides; sides of abdomen and ovipositor with dense, short, silvery-white pubescence, body including eighth tergite, thoracic dorsum with the setae shorter but more dense; setae on head dorsum longer and sparser; eyes apparently glabrous, but with fine setae on higher magnifications.

Head dorsum slightly more than 2.00-2.50 times wider than long; frontovertex slightly wider than long and slightly less than 2 times eye; eyes not over-reaching occipital margin behind, slightly diverging from about level of lateral ocelli; ocellar triangle obtuse, ocellocular space slightly more than ocellar diameter; interocellar space about 2 times ocellocular space; head in front, slightly wider than high; gena slightly more than 0.33 eye; toruli removed from facial margin by more than the major diameter of a socket, their lower margins in line with lower oribital border; scrobes narrow; about as long as the major diameter of a socket; head in side view, with the frontovertex gradually curving to meet with face, height

about 1.50 times of fronto-occipital width; eyes almost semi-circular, less than 2 times as long as wide, posterior margin straight.

Front margin of pronotum slightly concave in the middle; hind margin almost straight, its median length about 0.20 of maximum width; axillae narrowly confluent, overlapped mesially by the mid-posterior salient of mesoscutum; scutellum a trifle wider than long; fore wings 2.75 times longer than wide; speculum posteriorly cut-off by about 6-7 rows of discal setae, basal bare area suboval; costal cell with a single row of setae; marginal fringe short; vein *m* not longer than *m-pm* combined; middle metatarsus 1.33 times tibial spur.

Abdomen as long as or distinctly longer than head and thorax combined; ovipositor slightly less than 0.50 of abdomen; hypopygium prominent.

Male : Length 0.92-1.20 mm. Colour nearly as in female; scape blackish-brown with whitish; pedicel dark brown becoming pale towards apex; funicular segments and club brownish-yellow with dusky suffusions.

Head dorsum 2.33-2.50 times wider than median length; frontovertex 0.33-0.50 wider than long, nearly 0.50 wider than head width; ocellar triangle strong obtuse; ocelloccipital space about 2 times ocellar diameter; ocellocular space a little less; head in front 0.20 wider than high, with eyes only slightly diverging; toruli still higher on face than in female, scrobes shorter; scape 3 times longer than thick; pedicel triangular; first funicular segment nearly 0.50 times longer than second funicular segment and sixth funicular segment not less than 2 times as long as thick; wings slightly broader than in female; abdomen subequal to thorax, cercal plates situated at about basal 0.33 or slightly before; genitalia without digiti.

Type locality : Aligarh (U.P.)

Distribution : India; U.P.

Host : Unknown

Anagyrus bohemani (Westwood)

(Fig. 168)

1837 *Encyrtus bohemani,* Westwood, *Phil. Mag.,* 10 : 441.
1876 *Blastothrix bohemani,* Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 699.
1909 *Blastothrix bohemani,* Schmiedeknecht, *Gen. Ins.,* 97 : 241.
1921 *Anagyrus bohemani,* Mercet, *Fauna Ibetica, Encirtidos,* 136, Fig. 33.
1927 *Epidisocarsis bohemani,* Girault, *Entomologist,* 36.
1975 *Anagyrus bohemani,* Saraswat & Mukerjee, *Mem. School Ent.,* 4 : 44.

Female : Length 1.57 mm. Head, thorax pink or pinkish-brown; pronotal margin white; pleura yellowish-pink; scapula and

tegula white; latter somewhat darker behind; propodeum and abdomen brownish-black; antenna white; most of scape, base of pedicel, whole or most of first funicular segment black; legs mostly white; tarsi brown; middle tibia white, a little darkened basally; wings hyaline.

Head shagreened, with dense white pubescence; occiput somewhat margined; frons almost equal to eye; ocellocular space less than ocelloccipital space; eyes very large, convex, pubescent; gena equal to diameter of eye; scape equal to pedicel and first 2 funicular segments combined; pedicel about 0.30 of scape; larger than the following segments; funicle a little over 1.60 times the scape; the first 4 funicular segments subequal; segments 5-6 each a little shorter; club as thick as funicle and equal to preceding 2.50 funicular segments combined; mesonotum shagreened, densely pubsecent; scutellum shagreened; axillae large; both scutellum and axillae pubsecent; propodeum reticulately squamose; fore wing about 1.07 times body, with vein *m* very short, *pm* absent, *st* stout; speculum short, equal to 4 rows of setae; marginal fringe short; hind wing large; vein *sm* long; costal cilia absent; marginal fringe shortly than the width of the wing; middle tibial spur a little shorter than metatarsus; tip of middle metatarsus with a group of large spines; following segment with 4 apical spines, third segment with 3 and fourth segment with 2 spines.

Abdomen longer than thorax; strongly triangular, reticulately squamose; densely clothed with white setae.

Type locality : Central Europe

Distribution : Europe, India

Host : Parasite of *Leucaspis spp.* on *Hedera helix* and *Tamarix gallica.*

Anagyrus comperei Subba Rao

(Fig. 168)

1970 *Anagyrus comperei,* Subba Rao, *Beitr. Ent.,* 20 (1-2) : 91.

Female : Length 1.93 mm. Body robust; frontovertex yellow with mixture of ferruginous; eyes white; scape with a white patch at base; rest black; pedicel black at basal 0.50 and white apically; first funicular segment suffused with black; club brown, rest of funicular segments light yellow; hind margin of mesonotum and middle of scutellum with black linings; pronotum brown in the middle and yellow at sides; fore wings hyaline; middle leg light yellow, coxa darker yellow.

Head wider than throax; mandibles bidentate; maxillary palpi with 4 and labial palpi with 3 segments; scape slightly expanded; first

funicular segment slightly shorter than pedicel; segments 2-4 almost equal, 6-7 slightly thicker than long; club obscurely 3 segmented, oblong and tapering apically.

Scutellum with numerous bristles, last pair conspicuous; thorax prominently convex; front margin of pronotum convex, with a deep fissure posteriorly; vein *m* short, *st* long and *pm* short; middle tibial spur equal to metatarsus.

Abdomen longer than head and thorax combined, cordate, broad basally, tapering apically; ovipositor slightly exserted.

Male : Length 0.98 mm. Frontovertex yellow; scape white with a black patch in the middle; pedicel and funicular segments 2-6 brown; club dark brown apically; mesoscutum black in the middle, yellow laterally, with white hairs; scutellum black; abdomen brown.

Frontovertex wider than long, wider than eyes; ocellar triangle obtuse; antennae slender, long; scape expanded; pedicel as long as thick, 0.33 of first funicular segment; first funicular segment longest, 1.50 times second; segments 2-6 subequal, with whorls of long hairs; club slightly longer than the preceding 2 funicular segments combined; thorax convex; scutellum as long as broad; abdomen shorter than thorax.

Type locality : India : Delhi

Distribution : India

Host : Ferrisia sp., on avenue tree

This species is closely related to *A. abyssinicus* Compere, but differs : Thorax not black and flattened; silvery hairs not present; pronounced dilution of blackish or brown not evident in coxae and dorsal and ventral aspects of femora and tibiae; first funicular segment not as long as pedicel.

Anagyrus diversicornis Mercet

1921 *Anagyrus diversicornis,* Mercet, *Trab. Mus. Nac. Cienc. Nat. Madrid,* 134
1968 *Anagyrus diversicornis,* Trjpitzin, *Trud. Vses. ent. Obsh.,* 52 : 49.
1979 *Anagyrus diversicornis,* Hayat, *Orient. Ins.,* 13 (1-2) : 182.

Female : Length 1.48 mm. Head dull brown, vertex black with the inner orbital border and the spot on gena yellow; pronotum brown, laterally yellow; scapula and tegula white, with some black; scutum, axilla, scutellum, propodeum dull brown; abdomen brownish-black; scape black, white in apical 0.33; pedicel black at base and white apically; first funicular segment black, second and third segments white, segments 4-6 nigrescent; club yellowish-black; legs white with dorsum of femur and tibia with longitudinal brown streak.

Head a little longer than wide, densely clothed with white setae; eyes oval, hairy; ocellocular space a little less than interocellar space; first funicular segment equal to pedicel, more than 2 times as long as thick; longer than the sixth segment; vein *pm* less than 0.50 of *m;* scape often with a minute white spot below basally; labial palpi with 3 segments; club shorter than scape; brownish-yellow to dark brown; vein *pm* shorter than *m;* fore wings hyaline; thorax with white hairs; axillae contiguous; propodeum finely shagreened; wings with speculum limited, interrputed by some hairs in the posterior 0.33; middle tibial spur a little shorter than metatarsus; hind tibial spur single; abdomen elongate but equal to head and thorax combined; ovipositor about 0.20 of abdomen.

Type locality : Madrid

Distribution : Palaearctic; USA; India : Uttar Pradesh. Species is known to parasitize *Pseudococcus comstocki* (Kuwana) *P. multivorus* Kir., *Antonina purpurea* Sign., and *A. graminis* (Mask.)

Anagyrus greeni Howard

1895 *Anagyrus greeni,* Howard, *Proc. US nat. Mus.,* 18 : 639.

Female : Length 2.00 mm. Body dull reddish-yellow; scape black, with tip white; pedicel black and white at tip; first funicular segment black; other segments silvery-white; club yellow at tip; cheeks behind eyes black; mandibles black at tip; metanotum and abdomen dusky to almost black; legs pale; wings hyaline; head and thorax strongly shagreened, densely clothed with short setae; mesonotum with a distinct longitudinal striation; frontovertex wider than eye, but shorter than scape; ovipositor distinctly exserted; pedicel thicker and a little shorter than the first funicular segment; vein *st* longer than *m-pm* combined.

Male : Body black; mesopleura dark fuscous; legs darker than in female.

Type locality : Ceylon : Pundaloya

Host : Maskellia zonata

Anagyrus agraensis Saraswat

(Fig. 172)

1975 *Anagyrus agraensis,* Saraswat, *Mem. School Ent.,* 4 : 41.

Female : Length 2.00 mm. Body non-metallic, yellowish-brown; head dirty brown in the middle, vertex bright red, clypeal border and sides of gena black, eyes chocolate-brown, front ocellus red, tip of mandibles dark brown; general colour of antenna pale white, radicle and basal 0.75 of scape very dark brown, tip white

with a small brown area; basal 0.75 of pedicel blackish-brown, obliquely the apical 0.25 of white; first funicular segment darker brown; second brown, 3-6 pale white; first club segment brown, second and third pale white; thorax yellow, middle of pronotum and anterior border of mesonotum dark brown, all setae on mesonotum and scutellum white, except a pair of long black bristles posteriorly on mesonotum and 3 pairs of longer bristles on scutellum; propodeum yellowish-brown; abdomen dark brown, ovipositor dark brown, wings hyaline; veins brown; fore leg largely white, with obscure brown patches; middle femur almost white, except for a narrow black band apically above, tibia brown with the base white and the knee segment black, tarsus pale brown; hind leg largely brown, except the coxa which is darker.

Head distinctly narrower than thorax, viewed in front length to width 90 : 100, smooth, with fine obscure shagreening, very fine scattered hairs on face and vertex; ocellocular space equal to ocellar diameter, front ocellar space 1.25 times ocellar diameter, interocellar space equal to 3 ocellar diameter; eyes densely pubescent, eye length to head length 70 : 100; mandibles bidentate, teeth equal, acute; antenna inserted close to the mouth border; segments 11 : 1.1.6.3; scape expanded, 2 times longer than wide; pedicel 2.44 times longer than thick, 0.32 of scape; first funicular segment longest, 3 times longer than thick and 1.09 times pedicel; second segment subequal to pedicel, 2.50 times longer than thick and 0.83 of first; third 2.11 times longer than thick, 0.95 of the second; fourth equal to the third; fifth 1.60 times longer than thick, 0.84 of the fourth; sixth 1.38 times longer than thick, 0.95 of the fifth; club stouter than funicle, obtusely conical at tip, 3 times longer than thick, slightly less than the preceding 3 funicular segments combined, first club segment only slightly longer than thick and 1.18 times the preceding funicular segment, second 1.33 times the second.

Thorax distinctly finely shagreened; pronotum curved in front, not notched in the middle; mesonotum and scutellum with dense, scattered setae; mesonotum with a pair of long bristles on hind margin; scutellum with 3 pairs of longer bristles posteriorly; fore wing length to width 100 : 44; speculum interrupted, divided into a longer anterior and a shorter oval posterior parts; veins *sm : m : pm : st* ratio 800 : 100 : 62 : 100; hind wing to fore wing length 70 : 100; fore coxa 2 times as long as thick; femur about 4 times longer than thick, 1.66 times coxa; tibia 0.85 of femur, 4.85 times longer than thick, tarsus 1.12 times tibia; metatarsus 0.30 of tibia and 0.26 of tarsus, second segment 0.70 of metatarsus, third equal to the second, fourth 0.85 of the third, fifth only slightly shorter than metatarsus; middle coxa about 3 times longer than thick, femur 7 times longer than the apical thickness, tip with a circle of 11 denticles, tibial spur 0.34 of tibia and almost equal to metatarsus; tarsus about 0.70 of tibia, metatarsus 0.34 of tibia and 0.50 of tarsus,

with double row of 7 denticles below, second segment 0.29 of metatarsus, third 0.85 of the second, fourth equal to the third, fifth 1.33 times the fourth; hind coxa 1.33 times longer than thick; femur equal to middle tarsus, 4.36 times longer than thick, tibial spur 0.13 of tibia and 0.57 of metatarsus; tarsus subequal to femur, 0.80 of tibia, meatatarsus 0.24 of tibia and 0.30 of tarsus, second segment 0.64 of metatarsus, third subequal to the second, fourth 0.87 of the third, fifth, 1.43 of the fourth.

Abdomen finely, distinctly shagreened, 0.44 of body; second tergite subcordate, broadly rounded apically; ovipositor not exserted.

Type locality : Keetham, Agra

This species comes very clost to *Anagyrus delhiensis* Subba Rao & Rai. The description and figures by Rao and Rai show wide descrepancies and *A. delhiensis* is evidently in need of careful revision. This species differs from *A. delhiensis* in so many respects that it is referred to a distinct species. It is separated from *A. delhiensis* by the following : Larger body; antenna not uniformly light brown, but pale white, basal 0.75 of pedicel prominently blackish-brown and obliquely the apical 0.25 white; first funicular segment darker brown, second brown, 3-6 pale white; first club segment brownish, second and third pale white; it also differs in the presence of a pair of long black bristles posteriorly on mesonotum; head not wider but distinctly narrower than thorax; mandibular teeth equal and pointed, unlike in the figure of *A. delhiensis.* The first funicular segment shorter, sixth 1.38 times longer than thick; club not rounded but conical at tip; pronotum curved anteriorly, but not notched in the middle; fore wing with speculum interrupted, divided into a longer anterior and shorter oval posterior parts, vein *pm* shorter than *m,* vein *st* longer than *pm* and equal to *m,* the end of vein *sm* not touching the anterior margin of wing; middle tibial spur not shorter but almost equal to metatarsus; second abdominal tergite not elongate but subcordate and broadly rounded.

Anagyrus anamalaianus Mani & Kaul

1974 *Anagyrus anamalaianus,* Mani & Kaul, *Mem. School Ent.,* 3 : 63

Female : Length 2.00 mm. Body yellowish-brown to dark reddish-brown; head black, scape black with tip white, pedicel distal 0.30 white, otherwise black, 5 funicular segments black, segment 6 white, club white; legs yellowish-brown; scutellum with a median oval dark brown spot; wings hyaline, veins brown.

Head in front width to length 100 : 87; face with scattered shallow punctae; ocellocular space equal to ocellar diameter, interocellar space equal to about 5 ocellar diameters, front ocellar space equal to 2 ocellar diameters, maxillary palpi with 4 segments,

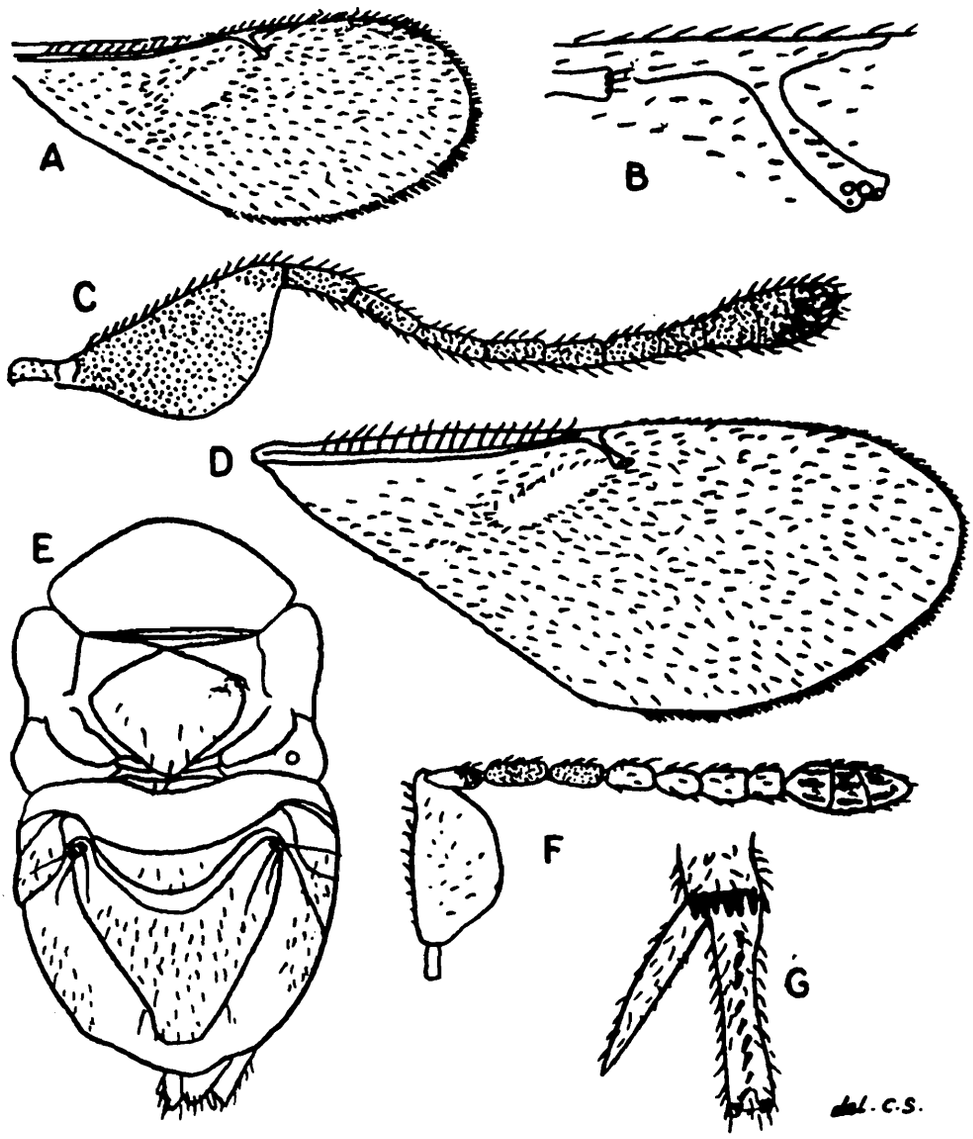

FIG. 172. A-C. *Anagyrus delhiensis* Subba Rao, female : A. Fore wing; B. Stigmal venation; C. Antenna; *(Modified from* Subba Rao) D-G. *Anagyrus agraensis* Saraswat, female : D. Fore wing; E. Thorax and abdomen; F. Antenna; G. Middle tibial spur and metatarsus.

first segment 3 times as long as thick, second equal to first but thicker, third a little shorter than second, fourth longest and almost equal to the preceding 2 segments combined; mandible tridentate; gena with distinct carina, 0.50 of eye; scrobes oblique but not meeting together above; antennae inserted close to the mouth border, segments 11 : 1.1.6.3; scape expanded below, 1.70 times as long as wide; pedicel about 0.50 of scape; first funicular segment a little longer than pedicel, second segment a little shorter than the first and subequal to pedicel, third segment 0.80 of the second, fourth 0.85 of the third and subequal to 5 and 6; club a little longer than the preceding 2 segments combined.

Thorax with fine reticulate microsculpture; pronotum : mesonotum : scutellum 20 : 100 : 100; pronotum 7 times as wide as long, mesonotum width about 1.50 times the length, scutellum as long as wide; fore wings length to width 100 : 37, speculum incomplete; veins *sm : m : pm : st* ratio 916 : 100 : 100 : 200; fore femur about 4 times as long as thick, tibia 0.90 of femur, spur a little shorter than metatarsus; tarsus equal to tibia, metatarsus 0.30 of tarsus; middle leg with femur 7 times as long as thick; tibia 1.20 times femur, with a circlet of stout black teeth apically, spur 0.65 of metatarsus; tarsus 0.80 of tibia, metatarsus 0.50 of tarsus, with a row of 10 spines beneath and 18 short teeth on side; second tarsal segment 0.30 of metatarsus with 6 teeth on side; third segment 0.87 of the second and with 7 teeth; fourth 0.70 of the third and with 4 teeth; fifth 1.40 times the fourth; hind femur 0.84 of middle femur and about 6 times as long as thick; tibia 1.12 times femur; tarsus a little longer than tibia, metatarsus about 0.36 of tarsus, second tarsal segment 0.50 of metatarsus, third 0.90 of the second, fourth shortest and 0.90 of the third, fifth 1.12 times the fourth.

Abdomen long, triangular, 0.60 of body, depressed dorsally, ovipositor slightly exserted.

Type locality : Valparai : Anamalai Hills

Anagyrus delhiensis Subba Rao

(Fig. 172)

1970 *Anagyrus delhiensis,* Subba Rao, *Beitr. Ent.,* 20 (1-2) : 89.

Female : Length 1.68 mm. Face above clypeal margin yellow; mandible brownish; pedicel, funicle and club uniformly light brown; frontovertex yellow; scape dark brown, with a white ring basally and the upper portion below the segment with a similar but a wider white ring; pronotal front margin white followed by light yellow, middle brown, scutellum yellow; thorax yellow with blackish suffusions laterally; coxae of all legs brownish; femur and tibia yellowish-white with brownish markings; abdomen dark brown.

Head slightly wider than thorax; frontovertex narrow, long; ocellocular space equal to the ocellar diameter; eyes round, prominent; maxillary palpi with 4 and labial palpi with 3 segments; mandible broad and widely bidentate; antennae comparatively long; basal segments slender, gradually becoming thicker and shorter towards apex; first funicular segment 4 times longer than thick, slender, longest; pedicel about 0.66 of first funicular segment, slightly expanding at tip; scape flattened; sixth funicular segment as long as thick at tip; club thicker than funicle, distinctly 3 segmented, rounded apically.

Pronotum curved in front, lobes at the hind margin with a deep cut; scutellum with 3 pairs of prominent bristles; fore wing longer than wide, with a small oval area without cilia; vein *sm* about 0.50 of wing; vein *m* short, *pm* long, *st* narrow and shorter than *pm;* middle tibial spur slightly less than metatarsus.

Abdomen tapering towards apex; 3 pairs of hairs on depression at base; ovipositor hardly exserted.

Type locality : India : Ridge Road, Delhi

Distribution : India

Host : Ferrisia virgata Cockerell on *Acacia* sp.

The orginal description and figures of the protologist do not agree in all respects and the figures do not seem to be reliable.

Anagyrus shahidi Hayat

1979 *Anagyrus shahidi,* Hayat, *Orient. Ins.,* 13 (1-2) : 177.

Female : Length 1.40 mm. Frontovertex and face yellow to dusky-yellow; facial margin, a band on each side from slightly above sockets to lower eye margins, and sides of occiput in basal 0.50 dark brown; temples behind eyes yellow; thorax dark brown, little shiny, hind and posterolateral margins of pronotum largely whitish; mesoscutum on sides narrowly pale yellow; basal 0.33 and apex of tegulae whitish, rest brown; front margin of prepectus and anteroventral margin of mesopleura brown; mesopleura pale yellow; metapleura with a yellow spot anterodorsally; abdomen dark brown to black; ovipositor black; a ring at base and a transverse large patch in middle and tip of scape, basal 0.50 of pedicel and first funicular segment dark brown to black; rest of scape, pedicel and funicular segment 2-3 whitish; funicular segment 4-6 and club dusky to brownish-yellow; fore wings infuscated; disc with pale brown setae, behind distal 0.50 of vein *sm* transparent; legs largely whitish to pale yellow, with dusky as follows : fore femur above and basal 0.33 of tibia; hind coxae and femur except at apex, knee and last segment of all tarsi.

Head wider than thorax; dorsum slightly more than 2 times as wide as median length; frontovertex more than 0.33 of head width, as wide as to slightly wider than long; ocellar triangle obtuse; ocellocular space slightly more than one ocellar, but less than 2 diameters; ocelloccipital space equal to ocellar diameter; eyes glabrous; head in front slightly wider than high; labial palpi with 2 segments; antennal sockets removed from facial margin by about 0.50 of the major diameter of a socket and their lower margins below level of lower orbital borders; scrobes reaching to about 0.33 of eye length; head in side view thin fronto-occipitally, height less than 2

times width with the eyes slightly less than 2 times longer than wide; gena about 0.50 of eye; scape slightly less than 3 times as long as wide; first funicular segment as long as or slightly shorter than pedicel; labial palpi 2 segmented.

Mesoscutum slightly more than 1.50 times wider than long; scutellum as long as mesoscutum and nearly as long as wide; vein *m* 3 times longer than thick; vein *st* not longer than *m-pm* combined; axillae overlapped medially by the midposterior salient of mesoscutum.

Abdomen 2 times longer than basal width, longer than head and thorax combined; ovipositor about 0.16 of abdomen, extending from about middle of second tergum; hypopygium enclosing almost whole of the exserted part of ovipositor

Male Not known

Type locality : Aligarh (U.P.)

Distribution India : U.P Andhra Pradesh, Rajasthan

Anagyrus swezeyi Timberlake

1918 *Anagyrus swezeyi,* Timberlake, *Proc. Hawaii. ent. Soc.,* 4 (1) : 199-201.
1970 *Anagyrus swezeyi,* Subba Rao, *Beitr. Ent.,* 20 (1-2) : 89.
1979 *Anagyrus swezeyi,* Hayat, *Orient, Ins.,* 13 (1-2) : 177.

Female : Length 1.85 mm. Frontovertex brown, with black suffusions in the middle upto occipital margin; scape with a narrow white patch basally and a broader white patch below tip; apex and middle black; basal 0.50 of pedicel black, rest white; first funicular segment black; following 2 segments white and rest brown; pronotum white at sides, clouded in the middle; thorax black with brown suffusions laterally; legs whitish; abdomen brown.

Maxillary palpi with 4 and labial palpi with 3 segments; ocellar triangle equilateral; scape 3 times longer than wide; first funicular segment distinctly longer than pedicel; pronotum broad; posterior depression broad, shallow and posterior side expanded into 2 lobes; vein *m* about 3 times as long as thick; vein *st* not longer than *m-pm* combined; vein *st* narrow at base, expanded at apex; middle tibial spur shorter than metatarsus, with teeth-like projections on the inner aspect of tarsal segments.

Male : Length 1.09 mm.

Type locality : Hawaii

Distribution Hawaii; India : Delhi and Karnal; S. Africa

Hosts : Saccharicoccus sacchari (Cockrell) on *Saccharum officinarum, Trionymus insularis, Chorizococcus rostellum* (Lodbell)

SPECIES INCERTAE SEDIS

Anagyrus kivuensis Compere

(Fig. 173)

1939 *Anagyrus kivuensis,* Compere, *Bull. ent. Res.,* 30 : 1-13.
1970 *Anagyrus kivuensis,* Subba Rao, *Beitr. Ent.,* 20 (1-2) : 91.

Female : Length 1.51 mm. Frontovertex orange-yellow; mandibles brown, with silvery-white in front and a dark patch in the middle; scutellum with a black line upto 0.66 in the middle; thorax yellow with black suffusions at the margin of mesonotum and middle of scutellum; coxa and femur white; tinged with some black apically; tibia white; abdomen black.

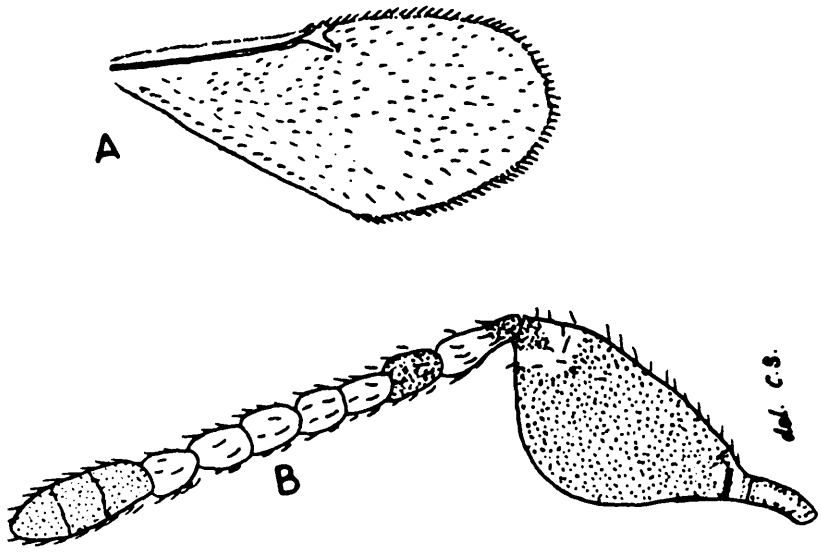

FIG. 173. *Anagyrus kivuensis* Compere, female : A. Fore wing; B. Antenna.

Mandibles bidentate; maxillary palpi with 4 and labial palpi with 3 segments; club thicker than the funicular segments, broadly rounded apically; vein *sm* about 0.50 of the wing; middle tibial spur 0.75 of metatarsus; abdomen slightly longer than head and thorax combined, tip almost pointed, longer than broad; ovipositor slightly exserted; wings reaching beyond the apex of abdomen.

Type locality : Belgian Congo

Distribution : Africa, Europe; India : Delhi

Hosts : Ferrisia virgata Cockerell on *Acacia* sp., *Pseudococcus* sp. from Belgian Congo.

Trichomasthus Thomson

1876 *Trichomasthus,* Thomson, *Hym. Scand.,* 4 : 117, 142.
1913 *Coccidoxenus,* Crawford, *Proc. US nat. Mus.,* 45 : 248.
1915 *Stenopteropsis,* Girault, *Mem. Queensland Mus.,* 4 : 176, 181.
1915 *Tetracnemella,* Girault, *Mem. Queenland Mus.,* 4 : 170, 182.
1937 *Trichomasthus,* Compere, *Bull. ent. Res.,* 28 (1) : 44.
1952 *Trichomasthus,* Risbec, *Ent. Mem. Inst. Sci. Madagascar,* (F) 2 : 30-35
1957 *Trichomasthus,* Alam, *Trans. R. ent. Soc. London,* 109 (15) : 446-450.
1960 *Coccidoxenus,* Robinson, *J. ent. Soc. S. Africa,* 23 (2) : 371-374.
1964 *Trichomasthus,* Trjpitzin, *Zool. Zhurn.,* 43 (10) : 1457-1462.
1964 *Trichomasthus,* Annecke, *J.ent. Soc. S. Africa,* 26 (2) : 390.
1969 *Trichomasthus,* Graham, *Polsk. Pismo. Ent.,* 39 (2) : 267.
1979 *Trichomasthus,* Krombein *et al.,* Hymen. N. America, 1 : 955.

Head thin; vertex carinate; eyes contiguous with the occipital margin, large, converging above; mandibles with a short apical tooth and a broad truncature; lateral ocelli contiguous with eye; interocellar space equal to ocellar diameter; front ocellar space 5-6 ocellar diameters; antennae in female inserted a little above mouth border; in the male a little above level of lower orbital border; funicle in female with 6 segments and one annellus, club with 3 segments; in male with 6 elongate segments, with verticillate hairs basally and apically; axillae distinctly separate; hind tibial spurs double; vein *m* subpunctiform, *pm* longer than *m; st* longer than *pm.*

Type-species : Trichomasthus cyaneus (Dalman)

This genus is separated from *Anagyrus* by the scape not swollen, lateral ocelli contiguous with eye; it also differs from *Anusia* in scape not swollen, funicle not compressed and axillae not meeting.

Trichomasthus distinguendus (Waterston)

1917 *Coccidoxenus distinguendus,* Waterston, *Bull. ent. Res.,* 73 : 311.

Female : Length 1.60 mm. Body blackish-brown; vertex metallic-blue; antennae pale brown, funicle a little infuscated dorsally apically, sixth segment darker, club distinctly so; mesonotum dark metallic blue-green, subshining before scutellar suture; scutellum dull, nearly black medianly, but sides shining metallic; propodeum and abdomen non-metallic; wings in median cloud dark, apex also beyond hyaline, lunar band clouded, though not so darkly as in the middle; legs from coxa to tip of femur blackish-brown; knees narrowly paler, fore tibiae pale, a little infuscated basally and along the dorsal and ventral edges, middle and hind tibiae dark with apices broadly paler; tarsi pale, fifth segment, all legs darker.

Head ratio 9 : 8, orbit 0.25 of depth of head, parallel; toruli distinctly below the level of lower orbital border, separated by just over their diameter from the mouth; punctation coarse along orbits

and on vertex; between orbits, anterior ocellus and toruli impunctate though rough; towards the genal keel coriaceous.

Mandibles tridentate, teeth short and broad, middle one most prominent; palpal segment ratio 20, 17, 15, 36 with about 40 external bristles, 15-16 apically stronger.

Pro- and mesonota upto suture regularly, finely transversely reticulate; mesonotum with about 100 bristles, becoming longer and sparser towards suture; axillae, the mid-anterior 0.50 and a small pre-apical spot on scutellum still with a fine reticulation, about 24 short bristles on the anterior 0.50 of scutellum and about 0.50 that number widely spaced towards apex with 2 approximated median bristles; fore wings 2.50 times as long as broad, vein *sm* very long, over 8 times vein *m,* and about 5 times *st.* veins *m :st : pm* ratio 8 : 14: 5; vein *sm* with 12 bristles; 4 long apical inferior bristles on the submarginal cell closer set; behind vein *sm* a complete row of short bristles, mainly coloured (2-3 beyond the middle of the submarginal, hyaline); behind this row again an incomplete row 4-5 bristles, thence to the hind edge of the wing bare; edge of the patch of bristles behind the marginal and before of the submarginal proximally and posteriorly about 20 weak hyaline bristles; hind wings narrow about 3.50 times as long as broad; 9 minute bristles in submarginal cell and 6-7 at hooks; fore coxa slightly narrower than in *T. obscuratus* and bearing posteriorly and subdorsally above the trochanter and patch of only 10 short bristles; metatarsus longer than fifth segment; middle tibia anteriorly on the apical edge with 8 peg-like spines, first 4 tarsal segments respectively 19, 10, 10, 7 similar spines; tarsus moderately bristly, on the posterior aspect of the first segment there are about 5 longitudinal rows of bristles containing in all about 50, while 12-13 of the plantar bristles spinose; hind tibia comb with 16-17 spines and 10 of the plantar spines stronger

Second tergite on each side broad, acuminate, with a slight, minutely bilobed apical furrow; on each 0.50 of the sclerite about 45 bristles, 20 more minute towards the base, remainder mainly on the distal 0.50.

Type locality : Aburi (Gold coast)

Distribution : Africa; India

Host : Lecanium subhemisphaericum Newst.

Neoplatycerus Subba Rao

1965 *Neoplatycerus,* Subba Rao, *Proc. R. ent. Soc. London,* (B) 34 : 150.
1975 *Neoplatycerus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 18.

Female : Head reddish-orange, with bluish on clypeus; antenna dark brown; thorax concolorous and flap of scape with bluish-green; abdomen brown; legs light brown to testaceous.

Head from front rounded; scrobes very deep, small semi-circular; frons and occiput bare except for some minute punctae; eyes large, not lenticular, oval; antennae inserted close to mouth border; highly foliaceous, longer than head and thorax combined; scape as thick as thickest funicular segment, with a characteristic flap bent outward; funicle 6 segmented; segments much thicker than long; club indistinctly separated from funicle; indistinctly 2 segmented; funicle and club together ovate; mandibles 2 dentate; pronotum narrow; axillae distinctly separated; scutellum shining and bare; fore wings fuscous, hyaline only apically; a group of comparatively stout setae in regular rows behind vein *sm;* vein *sm* very long; vein *m* punctiform, vein *st* long curved, *pm* distinct, a little shorter than *st;* middle tibial spur long; tarsi with well formed dentition.

Abdomen shorter than thorax and head combined; shortly triangular; paratergites deep and well defined; subgenital plate uniformly wide, with distinct incurved anterolateral lobes; posterior margin with a wide notch in the middle and a small lobe in middle of notch; mid-longitudinal groove incomplete; outer plates of ovipositor narrow basally, expanded behind with dorsal margin thickened and with a ridge extending to basal 0.67 of middle of plate; third valvulae long, movably articulated with second valvifers.

Type-species : Neolatycerus tachikawai Subba Rao

Neoplatycerus tachikawai Subba Rao

(Fig. 174)

1965 *Neoplatycerus tachikawai,* Subba Rao, *Proc. R. ent. Soc. London,* (B) 34 : 151.

1975 *Neoplatycerus tachikawai,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 18.

Female Length 2.30 mm. Body generally dark brown, with orange on frons, vertex, genae and thorax; eyes grey; antennae dark brown, club darker, prothorax slightly orange; mesothorax dark brown; fore wings largely fuscous, hyaline apically; venation entirely dark brown; dentition light brown.

Head almost as wide as thorax, rounded; ocellocular space less than ocellar diameter; ocellar triangle equilateral; front ocellus somewhat larger than lateral ocelli; mandibles bidentate, front tooth slightly longer than hind tooth; maxillary palpi with 4 segments; third segment 1.25 times longer than basal segment; labial palpi with 3 segments; apical segment oval, slightly longer than basal segment, second segment shortest; scape with prominent radicle; as thick as funicle, with characteristic dorsal flap to receive the flexed pedicel; pedicel triangular, 0.50 of scape width; funicle 6-segmented, indistinctly separated from club; segments much thicker than long;

segments 3-6 thickest, nearly 4 times thicker than long; club indistinctly 2-segmented, terminal segment smallest, funicle and club combined almost oblique.

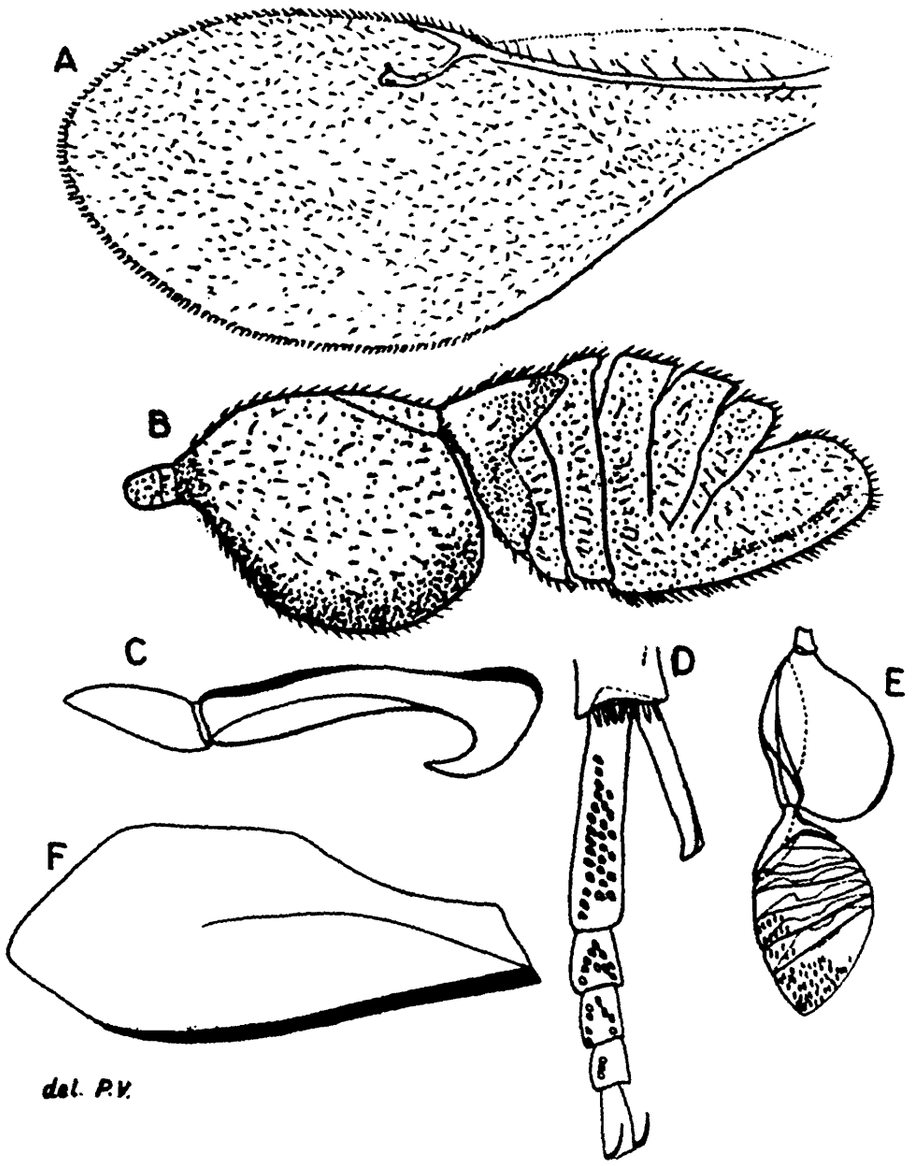

FIG. 174. *Neoplatycerus tachikawai* Subba Rao, female : A. Fore wing; B. Antenna; C. Second valvifer and third valvula; D. Part of Middle leg; E. Antenna; F. Outer plate of ovipositor. *(Modified from* Subba Rao).

Thorax almost smooth, except for some minute sparse hairs; collar narrow, arcuate; scutum separated from scutellum by wide groove; axillae not widely separated; scutellum convex, keel-shaped at apex; fore wings 2.25 times as long as wide; vein *sm* long and

curved, forming a wide costal cell; vein *m* punctiform, with hyaline space between *m* and *sm;* vein *st* longer than *pm;* middle tibial spur slightly shortly than metatarsus.

Abdomen short, triangular

Type locality India : Bhubaneswar

Distribution : Shahjahanpur

Hosts : Pulvinaria sp. on mango; *Rastrococcus iceryoides* (Green)

Charitopus Förster

1856 *Charitopus,* Förster, *Hym. Stud.,* 2 : 31.
1904 *Charitopus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 288.
1909 *Charitopus,* Schmiedeknecht, *Gen. Ins.,* 97 : 176.
1965 *Charitopus,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 91.

Middle metatarsus beneath without teeth or fine black denticles, mesonotum not impressed; axillae confluent; fore femora not thickened; males with antennal segments 2-5 ramose, vein *m* much shorter than *st;* parapsidal furrows present; subgenital plate broad basally, gradually narrowing apically with a notch in the middle of posterior margin, anterolateral apodemes present; outer plates of ovipositor uniformly wide, with thin dorsal margin, truncated apex; first valvifers suboblong; third valvulae oval, directed upwards, imperceptibly continuous with second valvifers.

Type-species : Charitopus fulviventris Förster

Charitopus cuprifrons (Motschulsky)

1863 *Leptorhopala cuprifrons,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (2) : 61.
1938 *Leptorhopala cuprifrons,* Mani, *Cat. Indian Ins.,* 23 : 106.
1964 *Charitopus cuprifrons,* Trjpitzin, *Trudy Zool. Inst. Akad. N. SSSR,* 34 : 242.
1978 *Charitopus cuprifrons,* Boucek, Subba Rao & Farooqi, *Orient. Ins.,* 12 (4) : 461.

Length 1.50 mm. "Elongata, subdepressa, subtiliter punctulata, nitida, virdi-aeneo, capite cupreo, abdominis margine laterallis uguiculis, antennisque nigris, his articulis 2 et 3, abdomine (margine laterali excepto) tarsique albidis, pedibus testaceis; capite subrotundato, oculis convexis, fuscis, antennis corporis longitudine, gracillis, depressiss, antice leviter incrassalis; thorace capitis latitudine, postice attenuato, subtiliter punctulato, pronoto subtransverso, lateraliter paulo marginato, medio elongato-trapeziformi impresso, mesonoto subovato, metanoto fere quadrato, inaequale, violaceo-metallico, postice truncato; abdomine sessile,

elongato-sub-elliptico, antice aequaliter angustato, postice subdilatato, versus apicem attenuato, submucronato, supra depresso, subtus in medio carinam longitudinali producto."

Type locality : Mt. Patannas : Ceylon

Host : Unknown.

Neocharitopus Hayat, Alam & Agarwal

1975 *Neocharitopus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 24

Female : Head about 3.50 times wider than median length of frontovertex, latter wider than eye width; eyes not over-reaching occipital margin; ocellar triangle obtuse; ocellocular space equal to ocellar diameter; ocelloccipital space a little less than ocellar diameter; genal suture distinct; scrobes well impressed; interscrobal area slightly between sockets; antennal sockets removed from oral margin by a distance slightly less than 1.50 times the greatest diameter of a socket, from orbit by about 2 times diameter; distance between sockets equal to the greatest diameter of a socket, funicle with 6 and club with 3 segments; scape cylindrical; pedicel longer than the following segment; funicular segments cylindrical, club thicker than funicle; mandibles bidentate; maxillary and labial palpi with 4 and 3 segments respectively; wings hyaline; vein *m* shorter than *st;* middle tibial spur slightly shorter than metatarsus.

Abdomen about as long as thorax; paratergites slender, thread-like; tenth tergite more or less as in *Clausenia;* subgenital plate reaching apex of abdomen; ovipositor concealed.

Male : Resembles female except as follows : first funicular segment transverse, segments 2-5 each with a lateral branch; sixth segment as long as fifth and shorter than club; fifth segment shorter than preceding 2 segments combined; club unsegmented; first branch about as long as club and sixth segment combined, fourth branch as long as the club.

Type-species : Neocharitopus orientalis (Agarwal)

Neocharitopus orientalis (Agarwal)

(Fig. 175 & 176)

1965 *Charitopus orientalis,* Agarwal, *Acta Hym. Tokyo,* 12 (2) : 91.

1975 *Neocharitopus orientalis,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 26.

1977 *Neocharitopus orientalis,* Trjpitzin, *Fol. ent. Hungar.,* 30 (1) : 159.

Female : Length 1.04 mm. Head shagreened, faintly metallic brown with violet tinge; eyes and ocelli obscure dirty; antennae uniformly reddish-brown, with scape slightly whitish at base and

apex; thorax faintly metallic, uniformly brownish-red; wings hyaline; fore coaxe, trochanters, femora and tibiae excepting apex and base dark brown, apex and base dark brown, apex and base of tibiae and tarsal segments 1-4 obscure white; middle legs brown, except trochanters, tip of femora, base, distal 0.50 of tibiae and tarsal segments 1-4 obscure-white; hind legs colour as other legs; abdomen brown.

Head wider than long, occipital margin rounded; frontovertex wider than long, wider than eye width; eyes almost globular; ocellar triangle acute-angled; ocellocular space less than ocellar diameter; ocelloccipital space a little less than 2 ocellar diameters; gena shorter than eye; antennal sockets close to mouth; mandibles bidentate; maxillary palpi with 4 and labial palpi with 3 segments; scape long, about 5 times longer than thick; pedicel about 1.50 times longer than thick, less than 3 times first funicular segment; first funicular segment short; 1.50 times thicker than long; club 3 segmented, as long as funicular segments 1-4 combined, 2.50 times longer than thick; second funicle to third club segments with 3, 3, 4, 5, 6, 9, 9 and 6 sensoria respectively.

Pronotum uniformly wide, front margin acutely notched in the middle, hind margin convex; mesoscutum with traces of parapsidal furrows anterolaterally; scuto-scutellar margin with about 10-12 strong setae; axillae narrowly contiguous; scutellum slightly longer than wide; metanotum narrow, band-like; propodeum almost of

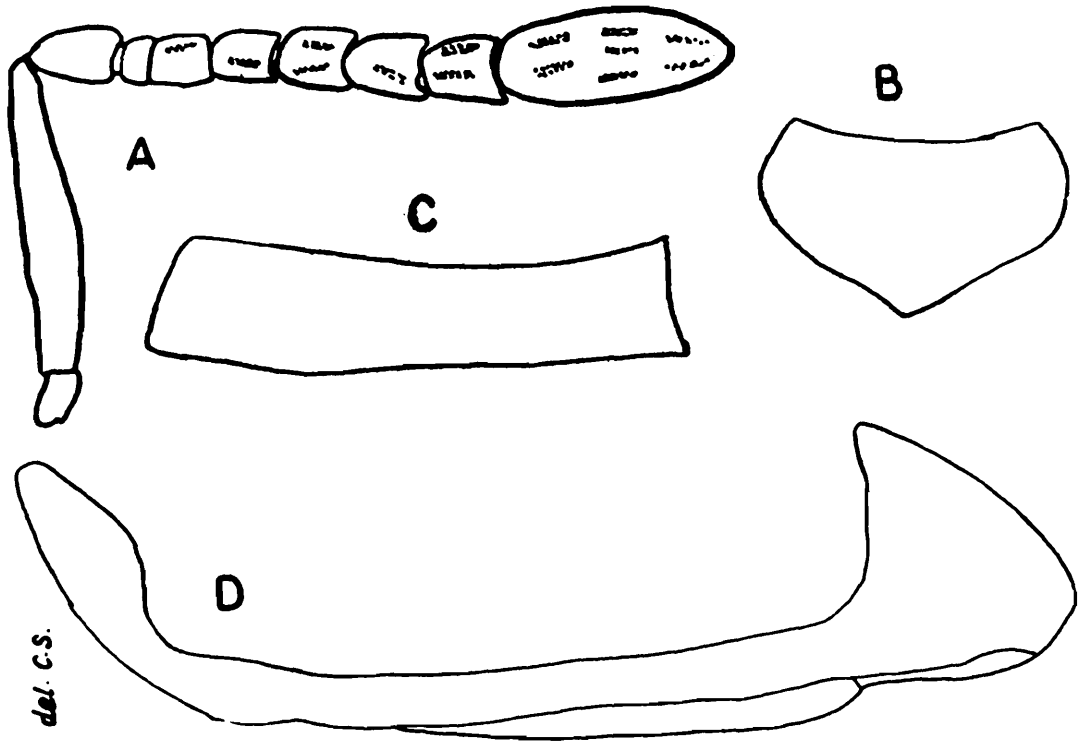

FIG. 175. *Neocharitopus orientalis* (Agarwal), female : A. Antenna; B. Subgenital plate; C. Outer plate of ovipositor; D. Second and third valvifer. *(Modified from Agarwal).*

uniform width; mesopostphragma narrowly rounded at apex; fore wings 2 times as long as wide; costal cell wide; vein *sm* very long, with 26 bullae; vein *m* short, 2.50 times longer than thick; vein *pm* longer than vein *m,* as long as vein *st,* marginal fringe moderate; middle tibial spur shorter than metatarsus; tip of tibiae with a row of 5 short pegs; tip of hind tibiae with a number of long acute setae, along with 4 short peg-like ones.

Abdomen longer than thorax, ovipositor concealed; cercal plates at apex; subgenital plate infumate, broad basally, gradually narrowing apically with a notch in the middle of hind margin, anterolateral apodemes present; outer plates of ovipositor almost of uniform width, with thin dorsal margin and truncated apex; first valvifer almost oblong, with base straight and articular knobs little prominent; second valvifer broad at base, long and narrow posteriorly; third valvulae short, conical, directed upwards, imperceptibly continuous with second valvifers.

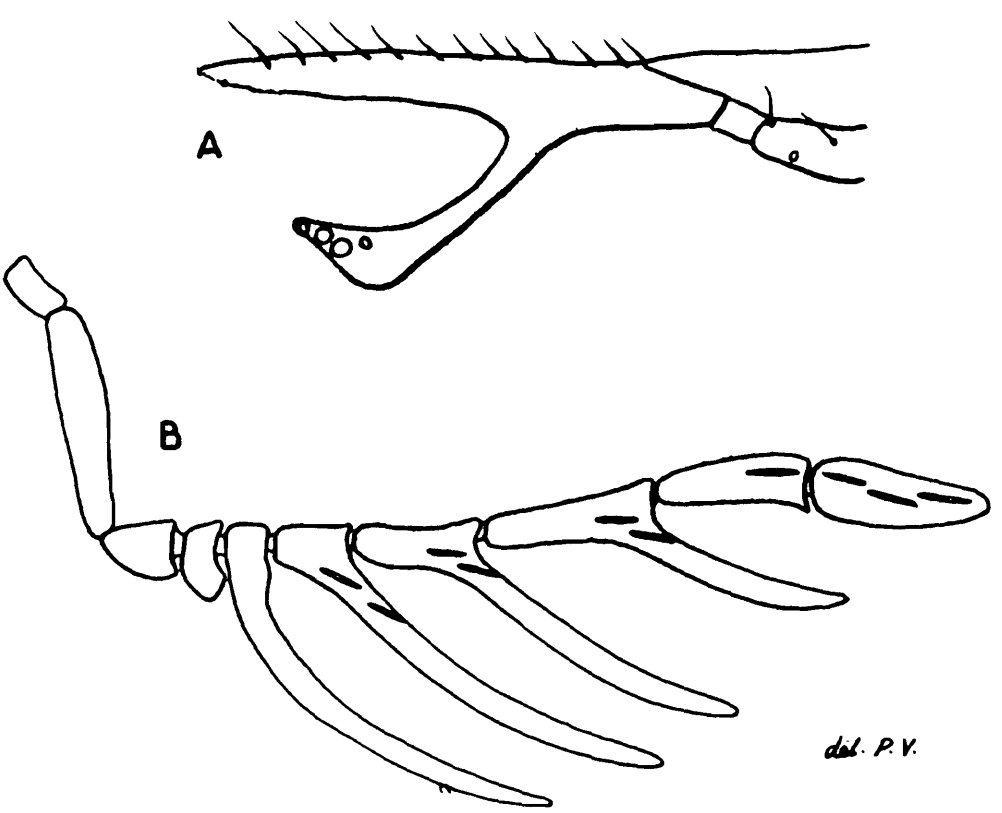

FIG. 176. *Neocharitopus orientalis* (Agarwal), A. Stigmal venation; B. Antennae. *(Modified from* Agarwal).

Male : Length 0.95 mm. Resembles the female except for the following differences : Antennae uniformly brown; scape cylindrical, less than 5 times longer than thick; pedicel slightly longer than thick; first funicular segment transverse, about 2 times thicker than long, more than 0.50 of pedicel; segments 2-5 ramose, fifth as

long as segments 1-3 combined; segments 4-6 much longer than in female, sixth segment about 3 times longer than thick; club entire.

Type locality : Aligarh

Hosts : Chionaspidis sp. on *Rhynchosia mimosa; Centrococcus insolitus.*

This species resembles *N. pinicola* Mercet, but may be distinguished as follows :

FEMALES

N. pinicola Mecret	*N. orientalis* Agarwal
1 Scape shorter than funicular segments 1-5 combined	Scape longer than funicular segments 1-5 combined
2 Apex of scape white	Scape uniformly brown
3 First funicular segment shorter than second segment	First funicular segment about 0.50 of the second segment
4 Club equal to preceding 2 segments combined	Club equal to preceding 3 segments combined
5 Fore and middle legs violet	Fore and middle legs brownish

MALES

1 Scape equal to funicular segments 1-5 combined	Scape shorter than funicular segments 1-4 combined
2 Sixth funicular segment longer than preceding segment	Sixth funicular segment clearly much longer than the preceding segment
3 Fifth funicular segment longer than preceding 4 segments combined	Fifth funicular segment shorter than preceding 2 segments combined
4 Club equal to sixth funicular segment	Club longer than sixth funicular segment

Paraleptomastix Girault

1915 *Paraleptomastix,* Girault, *Mem. Queensland Mus.,* 4 : 168, 182.
1939 *Paraleptomastix,* Mani, *Indian J. Ent.,* 1 (1 & 2) : 71.

Axillae confluent; vein *m* 3 times longer than thick, *pm* 2 times *m; st* shorter than *pm,* but longer than *m;* hind legs compressed; antennae long and slender, first funicular segment elongate; others gradually becoming shorter; sixth shortest; scutellum without hair tuft; abdomen not compressed; pronotum not very large; scape not expanded; club with 3 segments; funicle with 6 segments.

Head lenticular; mandible with 2 acute teeth; ovipositor not exersted; tibial spur double.

Type-species : Paraleptomastix thoreauini Girault

Paraleptomastix dactylopii (Howard)

(Fig. 177)

1885 *Leptomastix dactylopii,* Howard, *Bull. US Bur. Ent.,* 5 : 23

1892 *Leptomastix dactylopii,* Howard, *Proc. ent. Soc. Washington,* 2 : 237 (redescription)

1927 *Leptomastix dactylopii,* Dozier, *J. Dept. Agric. P. Rico,* 10 : 267 (redescription)

1939 *Paraleptomastix dactylopii,* Mani, *Indian J. Ent.,* 1 (1 & 2) : 70.

1940 *Paraleptomastix dactylopii,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 13.

Male/Female : Length of male about 0.97 mm, female about 1.50 mm. Body generally honey-yellow, with reddish tints on mesonotum and scutellum; antennae black; abdomen dark reddish-brown; posterior margin of scutellum with 2 black setae; lateral margins of mesonotum and the whole of propodeum black; carina at the meeting point of axillae present; costal area of the fore wing extraordinarily narrow, so that the vein *m* appears to be much longer than it really is.

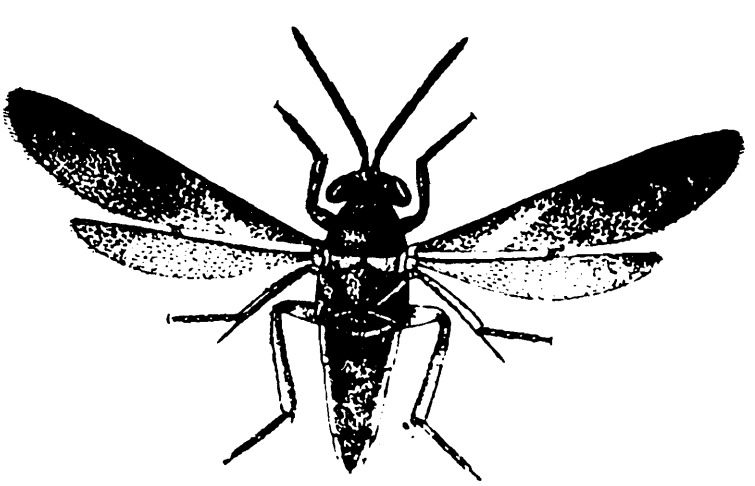

FIG. 177. *Paraleptomastix dactylopii* (Howard), female.

The species, originally described from specimens bred from *Pseudococcus citri* may prove to be identical with the European *Leptomastix histrio* Mayr.

Type locality : America

Distribution : America; India : Delhi

Hosts : Pseudococcus citri Risso and *Dactylopius saccharifolii*

Praleurocerus Agarwal

1966 *Paraleurocerus,* Agarwal, *Proc. Indian Acad. Sci.,* (B) 63 : 67,68. (preoccupied in Girault)

1966 *Praleurocerus,* Agarwal, *Proc. Indian Acad. Sci.,* (B) 63 : 67-79. (in corrigendum)

1967 *Praleurocerus,* Kerrich, *Bull. Brit. Mus.* (Ent.) 20 (5) : 141-250.

1975 *Praleurocerus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 18.

Female : Head broader than long, shagreened; frontovertex with small scattered punctae, width more than 2 times the length; eyes covering 0.75 of depth of head, about 1.50 times longer than wide; ocellocular space 1.50 times ocelloccipital space; gena shorter than eyes; scrobes deep, convergent, interscrobal area ridged; mandibles bidentate, apical tooth lanceolate; maxillary palpi with 4 segments; segments 1-3 equal, fourth longest; labial palpi with 3 segments; scape broad, laminate, more than 1.50 times longer than thick; pedicel short, about as long as wide; longer than first funicular segment; funicular segments 6 equally thick, transverse, much thicker than long; club unsegmented, as thick as funicle, more than 1.50 times longer than thick, equal to preceding 4 segments combined; funicular segments to club with 3, 3, 2, 2, 2 and 16 sensoria respectively.

Axillae broadly contiguous; scutellum as long as wide, extended backwards on a level with the expanded portions of the propodeum, narrowly rounded at apex; fore wings infuscate in the middle, hyaline basally and apically; vein *sm* very long; vein *m* short 2 times as long as thick; vein *pm* subequal to *m, st* very long more than 5 times longer than vein *pm;* marginal fringe very short, cilia spaced by a distance equal to 0.50 of their length; hind wings hyaline with very short marginal fringe.

Ovipositor concealed; subgenital plate of uniform width, with a small notch in the middle of the posterior margin, mid-longitudinal groove complete; outer plates of ovipositor narrow at base, broad and truncated at apex inflexed dorsal margin; first valvifers subtriangular with concave base, articular knobs prominent; second valvifers of uniform width dorsal margin thickened; valvulae imperceptibly merged with the second valvifer at apex.

Male : Antennal segments elongate-cylindrical, with subverticillate hairs, funicle with 6 segments, club solid.

Type-species : Praleurocerus viridis (Agarwal)

Praleurocerus viridis (Agarwal)

(Fig. 178)

1966 *Paraleurocerus viridis,* Agarwal, *Proc. Indian Acad. Sci.,* (B) 63 : 70.

1966 *Praleurocerus viridis,* Agarwal, *Proc. Indian Acad. Sci.,* (B) 63 : 70.

1975 *Praleurocerus viridis,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 18.

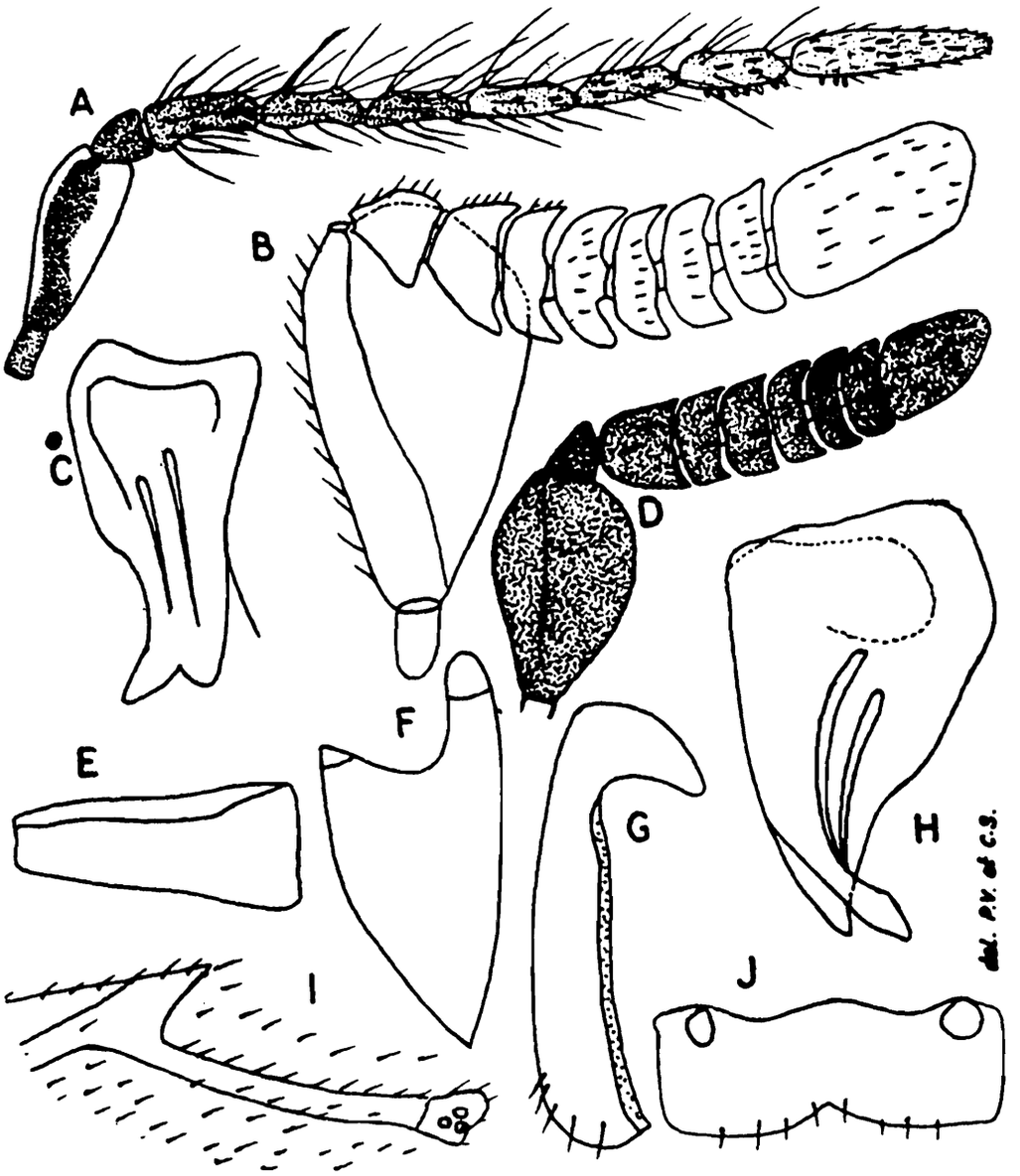

FIG. 178. *Praleurocerus viridis* (Agarwal) : A. Antenna, male; B. Antenna C. Mandible; D. Antenna, female; E. Outer plate of ovipositor; F. First valvifer; G. Second valvifer; H. Mandible; I. Stigmal venation; J. Subgenital plate. *(Modified from* Agarwal).

Female : Length 1.74 mm. Frontovertex black; face, gena, postocciput dark brown; antennae uniformly dark brown, with thickly distributed dark hairs; thorax black, faintly metallic; fore legs uniformly dark brown, with light markings on the trochanters and the tip of femora; middle coxae, trochanters, femora and tibiae dark brown, middle tibial spur shorter than metatarsus; tibial tip, metatarsus, tarsal segments 2-4 with 10, 15 (in 2 rows), 9, 5 and 4 pegs respectively; and hind legs dark brown, tip of femora, apical 0.50 of metatarsus and 2-5 tarsal segments white; tibial spurs double, unequal.

Abdomen brown, longer than thorax; cercal plates attached at basal 0.50.

Type locality : Aligarh

Distribution : Aligarh, Bareilly, Sitapur, Arakonum

Hosts : Rastrococcus iceryoides (Green) on different plants. Endoparasitic on *Lecanium viride* Green on *Althea rosea* Linn.

Pseudoleptomastix Girault

1915 *Pseudoleptomastix,* Girault, *Ann. ent. Soc. America,* 8 (3) : 272.
1979 *Pseudoleptomastix,* Krombein *et al.,* Hymen. N. America, 1 : 916.

Frontovertex broad; ocellocular space about 3 times ocellar diameter; antennae inserted below the level of lower orbital border, slender; scape fusiform, not expanded; funicle with 6 segments; club with 3 segments; axillae contiguous or nearly so; vein *pm* 2 times *m;* speculum present; mandible bidentate; eyes sparsely hairy; ovipositor slightly exserted.

Male : Scape short; club solid; funicle with long verticillate hairs.

Type-species : Pseudoleptomastix squammulatus Girault

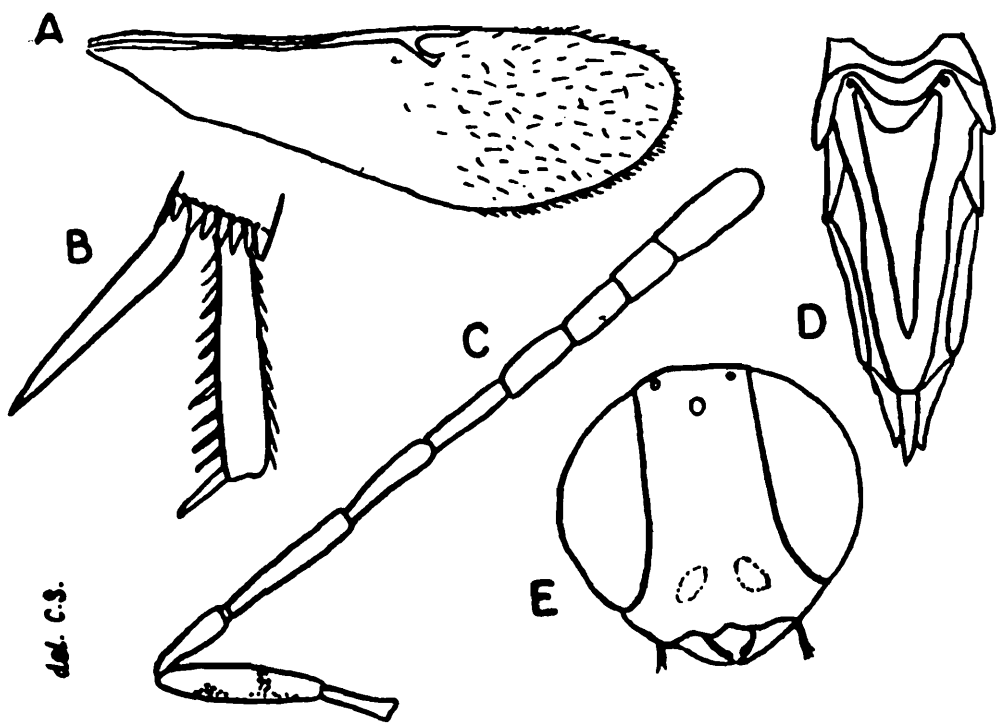

FIG. 179. *Pseudoleptomastix poonensis* Mani & Kaul, female : A. Fore wing; B. Middle tibial spur; C. Antenna; D. Abdomen; E. Head in front view.

Pseudoleptomastix poonensis Mani & Kaul

(Fig. 179)

1975 *Pseudoleptomastix poonensis,* Mani & Kaul, *Mem. School Ent.*, 3 : 68.

Female : Length 2.00 mm. Body brown, head black, antennae black except at extreme base of the first funicular segment, second funicular segment, scape apically with obscure band at base and middle white; fourth maxillary palpal segment brownish-black, otherwise maxillary palpi white; legs yellowish-brown; thorax dark brown; wings hyaline, veins brown.

Head in front width to length 100 : 88; face with scattered, shallow punctae; ocellocular space equal to ocellar diameter; interocellar space about 5 times and front ocellar space 3 times ocellar diameter; gena 0.25 of eye; maxillary palpi with 4 segments, first segment 2 times as long as thick, second segment 1.25 times the first and 2 times as long as thick, third segment 0.80 of the second and 2 times as long as thick, fourth segment 2 times the third and 5 times as long as thick; mandibles bidentate; antennae inserted a little below the lower orbital border, segments 12 : 1. 1.1. 6. 3; scape 5.40 times as long as thick; pedicel about 0.60 of scape; annellus short; first funicular segment about 1.70 times pedicel and a little shorter than scape, second segment 0.70 of first, third segment 0.87 of second, fourth 0.90 of third, fifth 0.80 of the fourth, sixth 0.87 of the fifth; club a little shorter than the preceding 2 segments combined.

Pronotum : mesonotum : scutellum lengths 25 : 100 : 100; mesonotum shagreened, with scattered shallow punctae, 2 times as wide as long; scutellum shagreened, 1.10 times as wide as long; axillae separate; fore wings length to width 100 : 31, veins *sm : m : pm : st* ratio 238 : 100 : 40 : 30; speculum incomplete; fore to hind wing 100 : 75; fore femur 5 times as long as thick; tibia 1.20 times femur; tarsus 1.40 times tibia; middle femur long, slender, about 7 times as long as thick; tibia 1.20 times femur, tip with a circlet of sharp teeth, spur a little longer than metatarsus; tarsus 0.73 of tibia, metatarsus 0.33 of tibia and with a double series of 9 teeth beneath, second tarsal segment 0.40 of metatarsus, third 0.70 of the second, fourth about 1.30 times the third, fifth 0.66 of the fourth; hind femur short, stout, length 4 times thickness; tibia 1.60 times femur, spur 0.33 of metatarsus; metatarsus 0.30 of tibia, second segment a little over 0.50 of metatarsus, third 0.73 of the second, fourth a little shorter than third, fifth equal to the third.

Abdomen smooth, 0.60 of body; ovipositor slightly exserted.

Type locality : Poona

This species differs from *Pseudoleptomastix squammulatus* Girault in the larger size, narrower wing, different coloration of antennae, shorter scape and in the first funicular segment being longest.

Thomsonisca Ghesquiere

1921 *Thomsoniella,* Mercet, *Fauna Iberica, Himenopt. Encirtidos :* 90 (preoccupied in *Thomsoniella* Signoret, 1880)
1946 *Thomsonisca,* Ghesquiere, *Rev. Bot. Zool. Afr.,* 39 : 369.
1953 *Heterencyrtus,* Hoffer, *Ochrana prirody,* 8 : 86.
1957 *Kostarbia,* Erdös, *Annl. Hist. nat. Mus. Natl. Hungarici,* (N. S.) 8 : 368.
1957 *Euusuria,*Tshumakova, *Zool. Zhurn.,* 36 : 539.
1957 *Athesmus,* Erdös & Novitzky, *Acta Zool. Hungarici,* 3 : 65.
1963 *Thomsonisca,* Tachikawa, *Mem. Ehime Univ. Sect.,* 9 (1) : 1-264.
1969 *Thomsonisca,* Graham, *Polsk. Pismo Ent.,* 39 : 311-319.
1970 *Pakencyrtus,* Ahmad, *Entomophaga,* 15 : 237.
1970 *Thomsonisca,* Hayat, *Mushi,* 44 (8) : 55.
1979 *Thomsonisca,* Subba Rao, *Orient. Ins.,* 13 (1-2) : 139, 140.

Female : Head above 2 times as wide as long, convex; eyes small, finely hairy; maxillary and labial palpi respectively with 3 and 2 segments, though both 2 segmented in *T pakistanensis;* mandibles with 2 distinct teeth and a truncature or somewhat tridentate; antennae inserted just above the level of orbital border; scape cylindrical; funicle 6 segmented and club 3 segmented; club and funicle not clearly differentiated; thorax convex above, axillae contiguous; veins *m, pm* and *st* well developed; abdomen oval, cordate, slightly longer than thorax, ovipositor slightly or well exserted.

Male : Like female except for antennae.

Type-species : Thomsonisca typica (Mercet)

KEY TO SPECIES

1	Ovipositor at least 0.33-0.50 of abdomen and originating from base; maxillary palpi 3 segmented; labial palpi 2 segmented	2
	Ovipositor concealed or slightly exserted and orginating from the middle of abdomen	*T pakistanensis* (Ahmad)
2	Fore wings hyaline; vein *pm* well developed, clearly defined; antenna in the female without long sigmoid bristless, the longest being less than 1.50 times the thickness of the funicle	*T indica* Hayat
	Fore wings mostly hyaline, with a strong narrow patch of infuscation behind vein *m;* vein *pm* not well developed though strongly pigmented; antenna in male with very short, straight bristles, the longest a little over the thickness of the funicle.	*T. sankarani* Subba Rao

Thomsonisca pakistanensis (Ahmad)

(Fig. 180)

1970 *Pakencyrtus pakistanensis,* Ahmad, *Entomophaga,* 15 : 237-240.
1975 *Thomsonisca desantisiellus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 89.
1979 *Thomsonisca pakistanensis,* Subba Rao, *Orient. Ins.,* 13 (1-2) : 141.

Female Length 0.80 mm. Body dark brown; scape, pedicel dark brown, rest of antenna brown; eyes red; legs orange-yellow; coxa brown; thorax dark; wings hyaline; abdomen dark brown.

Head in front wider than long; frontovertex slightly longer than wide; ocellar triangle equilateral; lateral ocelli contiguous with eye and to occipital margin; gena equal to eye; eyes sparsely setose; antenna inserted on level of lower orbital border; mandibles tridentate; both maxillary and labial palpi with 2 segments; scape about 3 times longer than thick; pedicel slightly longer than thick, distinctly shorter than the first funicular segment; funicular segments 1-6 distinctly longer than thick, gradually longer apically; club long, more than 4 times than thick, slightly shorter than the preceding 3 funicular segments combined.

Scutum and scutellum reticulate; scutum slightly wider than long; axillae meeting in the middle; scutellum slightly wider than long and and slightly shorter than scutum; mesopostphragma long and broadly truncate at apex; fore wings slightly more than 2 times longer than wide; costal cell broad; vein *sm* with 9 long setae; vein *m* subequal to *st* and slightly longer than *pm;* marginal fringe short and spaced by a distance equal to 0.33 of hair length; hind wings slightly more than 4 times longer than wide; marginal fringe short and spaced by a distance equal to 0.33 of hair length; middle tibial spur slightly longer than metatarsus; tip of tibia with 3 stout pegs.

Abdomen slightly shorter than thorax; ovipositor concealed.

Type locality : Udaipur

Distribution : Aligarh, Udaipur; Karachi (Pakistan)

Hosts : Coccus sp. on *Mangifera indica* Linn., *Aspidiotus destructor* on *M. indica,* and *Hibiscus rosasinensis, Aulacapsis* sp., *Phenaspis* sp. on *M. indica*

This species is readily separable by having 2 segmented maxillary and labial palpi and pedicel shorter than first funicular segment.

Thomsonisca indica Hayat

(Fig. 180)

1970 *Thomsonisca indica,* Hayat, *Mushi,* 44 (8) : 56.
1979 *Thomsonisca indica,* Subba Rao, *Orient. Ins.,*13 (1-2) : 143.

Female : Length 0.70 mm. Head black; radicle and scape pale brown, pedicel except narrowly on apex brown; narrow apical area of pedicel, funicle and club dirty-yellow; thorax blackish-brown; scutellum with 8 black setae; wings hyaline; fore legs whitish-yellow; coaxe light brown apically; femora below and above, a narrow strip on dorsal surface at basal 0.33 of tibia brown; middle legs whitish-

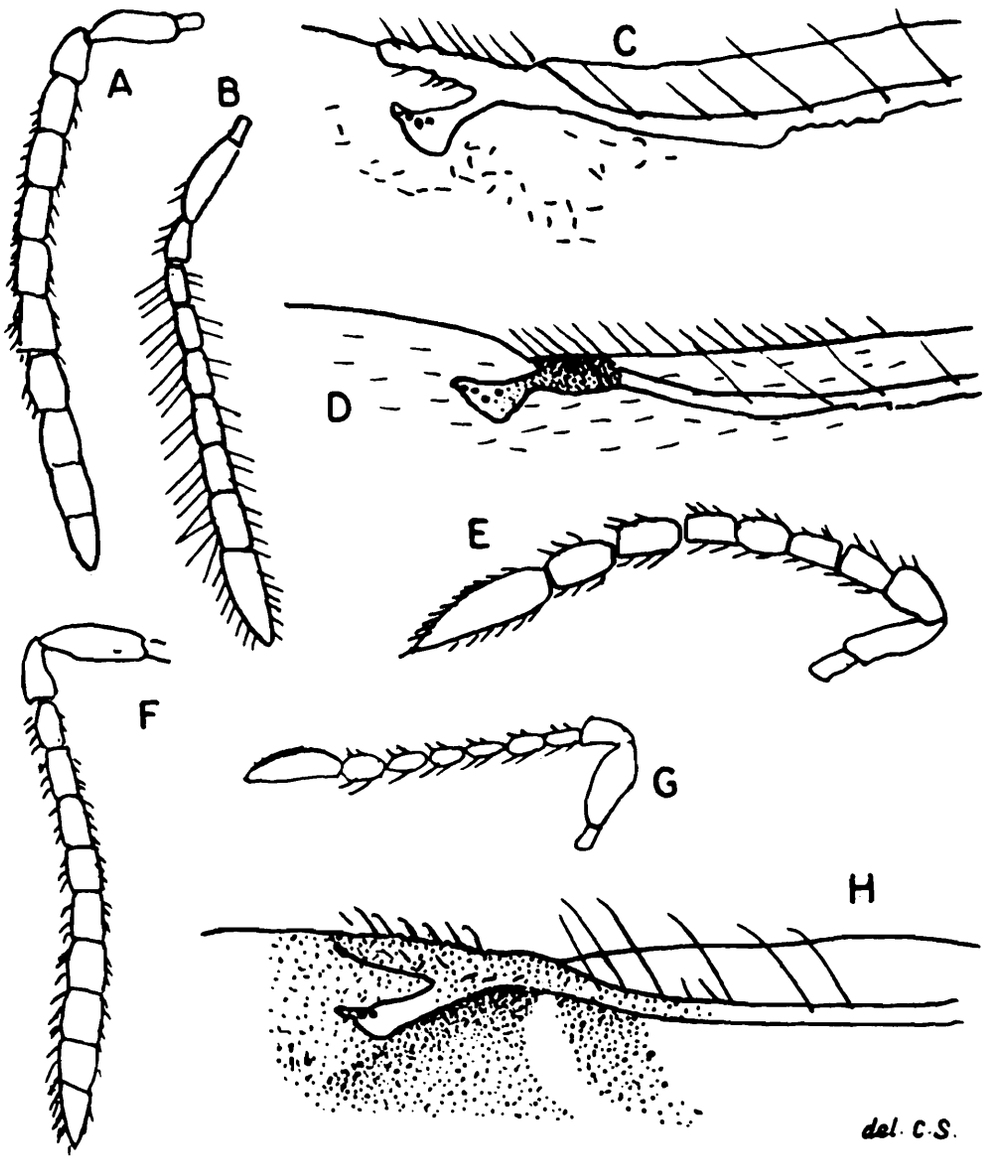

FIG. 180. *Thomsonisca pakistanesis* (Ahmad) : A. Antenna, female; B. Antenna, male; C. Stigmal venation, female; D-E. *Thomsonisca indica* Hayat : D. Stigmal venation, female; E. Antenna, male; F-H. *Thomsonisca sankarani* Subba Rao : F. Antenna, female; G. Antenna, male; H. Stigmal venation, female. *(Modified from different authors).*

yellow, coaxe except apex, a faint mark on tibia at base brown; hind coaxe, femora, tibia except base and apex, brown; apex and base of tibia and tarsal segments yellow; abdomen black.

Head finely reticulate, with a few fine setigerous punctae on frontovertex, almost 2 times wider than long; frontovertex a little wider than long; ocellar triangle obtuse-angled; ocelloccipital space equal to ocellar diameter; gena shorter than eye, suture complete; antennal sockets removed from facial margin by a length equal to intersocket distance; mandible with one acute tooth followed by a

broad truncature; maxillary and labial palpi with 3, and 2 segments respectively; scape 3 times longer than thick; pedicel suboval, almost as long as thick, equal to first funicular segment in length and much thicker than it; funicular segments longer than thick; club shorter than preceding 3 funicular segments.

Mesocutum and scutullum conspicuously reticulate; axillae finely reticulate, metanotum and propodeum transversely strigose on sides; pronotum with front margin not notched in middle, hind margin convex with 14 submarginal setae; mesoscutum wider than long, apex rounded; mesopostphragma moderately long, apex notched; fore wings well developed, veins end before middle of front margin; vein *m* and *pm* equal, shorter than *st;* speculum narrow, interrupted near *pm* by two rows of setae; marginal fringe of hind wings about 0.33 of width of wing; middle tibial spur longer than metatarsus, tip of tibia and tarsal segments 1-4 bearing 3, 3, 2, 1 and 1 pegs respectively.

Abdomen as long as thorax, apex narrowed; subgenital plate covering basal 0.50 of ovipositor, wide, with a shallow groove in middle, posterior margin with a notch, sides of the notch guarded by knobs, followed by laterally directed ridges; second valvifers with a submarginal ridge running its whole length; first valvifers an elongated triangle; outer plates with basal 0.66 of dorsal margin thickened, the thickening extending on distal 0.33 as submarginal ridge.

Male : Length 0.57 mm. Like female, except antennae; pedicel longer than first funicular segment; first 4 funicular segments subequal, each about 1.50 times as long as thick; distal 2 segments longer than preceding 4 segments individually; club entire, slightly longer than preceding 2 funicular segments combined.

Type locality : India : Uttar Pradesh, Aligarh.

Thomsonisca sankarani Subba Rao

(Fig. 180)

1979 *Thomsonisca sankarani,* Subba Rao, *Orient. Ins.,* 13 (1-2) : 142.

Female : Length 1.00-1.35 mm. Head, thorax and ovipositor almost black; scutellum somewhat brown; abdomen brown to dark brown; antennae pale, middle and hind femora and tibia with dark patches; fore wings hyaline, with dark infuscation behind vein *m*.

Head and thorax except axillae reticulate; axillae somewhat strigose; abdomen shiny, with very fine honey-comb patterns.

Head in front wider than long; vertex across the median ocellus slightly wider than width of eye; ocellar triangle equilateral;

ocellocular space about 0.75 of ocellar diameter; gena equal to eye; eyes delicately hairy; mandible with a short acute tooth and a broad curved truncature; antennae inserted slightly above the lower orbital border; radicle 0.25 of scape, scape slightly dilated at apex; pedicel 0.50 of scape, funicular segments 1-4 almost quadrate and equal, 5-6 somewhat shorter; club distinctly 3 segmented and slightly shorter than the last 3 funicular segments combined.

Scutellum a little shorter than scutum; axillae clearly meeting in the middle; mesophragma long, conical, well advanced into abdomen; fore wings slightly more than 2 times as long as broad; costal cell broad; vein *sm* with 9-11 long setae; vein *sm : st : pm* ratio 18 : 17 : 14.

Abdomen longer than thorax; ovipositor originating from base of abdomen; exserted about 0.33 or more, as long as abdomen.

Type locality : India : Karnataka

Distribution : India : Karnataka, Bannerghutta, Hessarghatta Hoskote and Whitefield.

Host : Pseudaulacaspis barberi (Green) on *Mangifera indica* Linn.

Leptomastix Förster

1856 *Leptomastix,* Förster, *Hym. Stud.,* 2 : 34.
1856 *Sterrhocoma,* Förster, *Hym. Stud.,* 2 : 33, 36, 37.
1904 *Leptomastix,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) 294.
1904 *Stenoterys,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 294.
1909 *Leptomastix,* Schmiedeknecht, *Gen. Ins.,* 97 : 201.
1909 *Stenoterys,* Schmiedeknecht, *Gen. Ins.,* 97 : 203.
1913 *Calocerinella,* Girault, *Bull. Wisc. Nat. Hist. Soc.,* 11 : 46.
1921 *Leptomastix,* Mercet, *Fauna Iberica,* 119.
1922 *Leptomastix,* Ruschka, *Verhandl. zool.-bot. Ges. Wien,* 72 (2) : 12.
1938 *Leptomastix,* Compere, *Bull. ent. Res.,* 29 (3) : 323-325.
1939 *Leptomastix,* Compere, *Bull. ent. Res.,* 30 (1) : 24.
1939 *Leptomastix,* Compere, *Pub. Ent. Calif. Univ.,* 7 (4) : 57, 58.
1950 *Leptomastix,* Kryger, *Ent. Medd.,* 26 (2) : 107-108.
1952 *Leptomastix,* Risbec, *Mem. Inst. Sci. Madagascar,* 2 : 15.
1963 *Leptomastix,* De Santis, *Ann. Com. Invest. Cient. Prov. Buenos Aires,* 4 : 84.
1965 *Leptomastix,* Trijpitzin, *Ent. Rev.,* 44 (4) : 518-520.
1969 *Leptomastix,* Graham, *Polsk. Pismo Ent.,* 39 (1) : 216-219.
1979 *Leptomastix,* Krombein *et al.,* Hymen. N. America, 1 : 915.

Female : Body red, yellow or black. Head as wide as thorax; occiput excavate; occipital border acute; ocellar triangle equilateral; ocellocular space equal to ocelloccipital space; eyes large, naked or with sparse short hairs; mandibles bidentate; maxillary palpi with 4 and labial palpi with 3 segments; antennae long, filiform, inserted

on level of lower orbital border, with 11 segments : 1.1.6.3; scape cylindrical, long; pedicel longer than the following segments; funicle setose, becoming thicker apically, segments longer than thick; first segment equal to the following segments; club ovate-lanceolate, thicker than funicle.

Pronotum short; mesonotum long, without parapsidal furrows; axillae contiguous; scuttellum triangular, almost flat; propodeum short in the middle, wider laterally; wing long, hyaline, costal cell well developed; speculum interrupted in the middle; marginal fringe short; vein *m* longer than thick; veins *pm* and *st* subequal to *m;* legs long; middle tibial spur long, pointed, middle tarsus swollen; hind tibial spur double.

Abdomen triangular, compressed apically, longer than thorax, spiracular setae long; ovipositor concealed.

Male Eyes smaller in female; scape shorter, compressed, subfusiform; pedicel as long as thick; funicle pyriform, with verticillate setae; club entire; abdomen shorter than thorax, truncated apically.

Type-species *Leptomastix histrio* Mayr

KEY TO SPECIES

1. Middle coxae yellow; scape longer than the first 2 funicular segments combined; first funicular segment about 1.25 times pedicel	*L. salemensis* Hayat, Alam & Agarwal
Middle coxae brown or black	2
2. Scape longer than the first 2 funicular segments combined; axillae reddish-brown	*L. brevis* Hayat, Alam & Agarwal
Scape shorter than the first 2 funicular segments combined; axillae yellow.	*L. nigrocoxalis* Compere

Leptomastix salemensis Hayat, Alam & Agarwal

(Fig. 181)

1975 *Leptomastix salemensis,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 17.

Female : Length 1.44 mm. Differs from *L. brevis* as follows : Frontovertex yellow; slightly more than 2 times as wide as long; ocellar triangle obtuse-angled; ocellocular space equal to 2 ocellar diameters; first funicular segment less than 3 times as long as thick, subequal to the second funicular segment.

Thorax yellow, except for a small brown patch in the middle of pronotum; fore wings slightly over 2.50 time as long as wide; veins *m, pm* and *st* subequal; speculum interrupted behind by 2 rows of

discal setae; middle coxae yellow; middle tibial spur shorter than metatarsus; tip of tibia and tarsal segments; 1-4 with 6, 8, 5, 4 and 3 pegs respectively.

Abdomen longer than thorax; ovipositor concealed.

Type locality : Salem.

Leptomastix brevis Hayat, Alam & Agarwal

(Fig. 181)

1975 *Leptomastix brevis,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 14.

Female : Length 1.90 mm. Body yellow; head orange-yellow; occiput behind eyes marked black; a brown patch in the middle of frontovertex extending from occipital margin to front; antennae brownish-black; scape below yellow; thorax yellow; pronotum with a large brown patch in middle, front margin of mesoscutum brown, axillae reddish-brown, scutellum with an irregular longitudinal brown band in the middle, rest yellow; mesopleura red behind; propodeum dusky distad of spiracles; legs pale yellow; middle coxa and tarsi brown; abdomen brown above, yellow otherwise.

Head 2 time as wide as long; frontovertex as long as wide, sparsely setose; ocellar triangle equilateral; ocellocular space equal to 2.50 times ocellar diameter; ocelloccipital space equal 1.50 times ocellar diameter; eyes bare; gena shorter than eye; head in front 0.25 wider than long; antennal sockets removed from facial margin by a distance equal to diameter of a socket, a little below lower orbital border; mandibles bidentate; maxillary palpi with 4 and labial palpi with 3 segments; scape 5 times as long as thick; pedicel nearly 2 times as long as thick, 4 times shorter than first funicular segment; first funicular segment 3 times as long as thick; distinctly shorter than the second funicular segment; club longer than preceding 2 funicular segments combined, longer than first funicular segment.

Pronotum with front margin concave, hind margin convex, with 6 pairs of setae; mesocutum as long as scutellum; scutellum slightly wider than long, with brown setae, 2 setae on apex long and brown; mesopostphragma with a notch at apex; fore wings slightly less than 2.50 times as long as wide; veins *m* and *pm* subequal, each longer than vein *st,* speculum interrupted behind by 4 rows of discal setae; marginal fringe short; middle tibial spur equal to metatarsus, tip of tibia and tarsal segments 1-4 with 6, 7, 4, 4 and 2 pegs respectively.

Abdomen longer than thorax; cercal plates at basal 0.33; front margin of subgenital plate slightly concave; hind margin with a shallow notch in middle, mid longitudinal groove incomplete; second valvifers with dorsal margin thickened; outer ovipositor plates almost uniformly wide, with a ridge along dorsal margin, ventro-posterior angle drawn upwards like a curved broad blade; ovipositor concealed.

Type locality : Kalamasseri

Distribution : Salem

Host : Icerya aegyptica (Doug.)

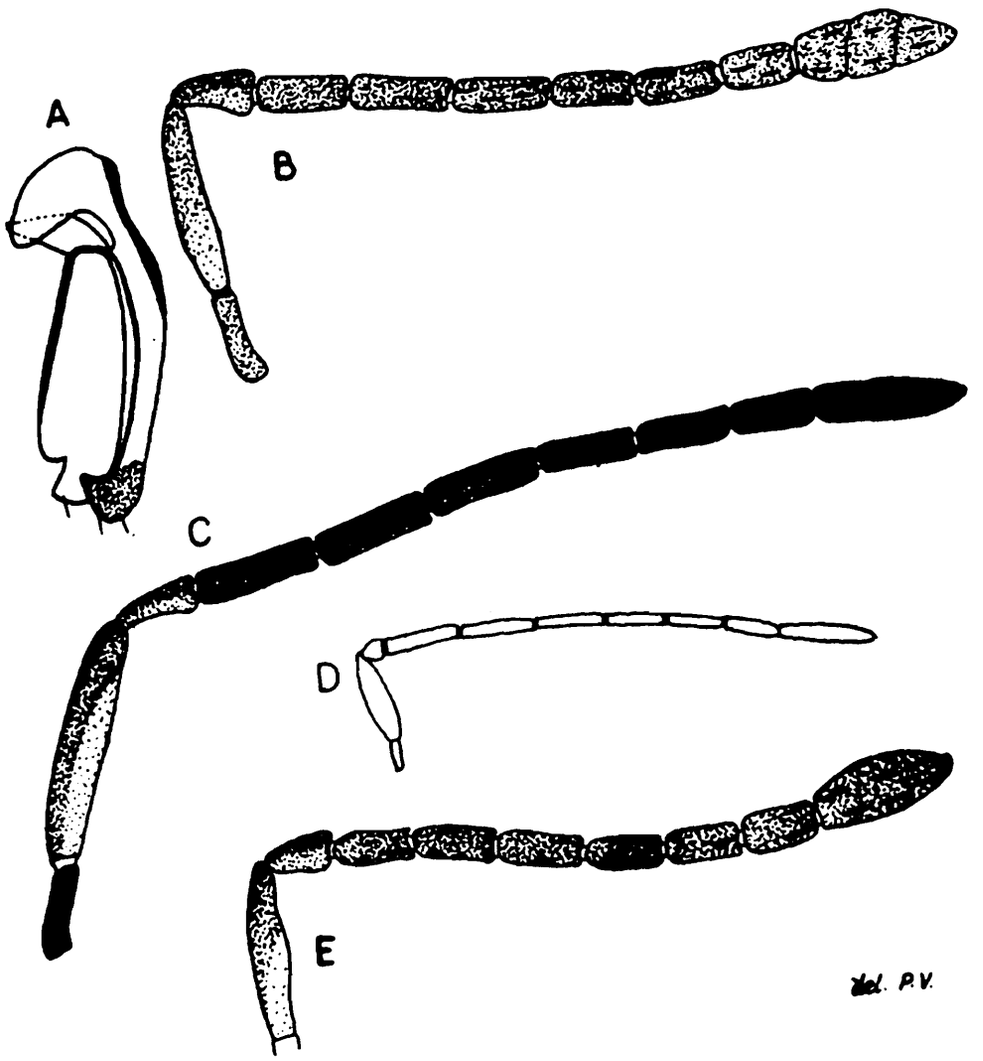

FIG. 181. A-B. *Leptomastix brevis* Hayat, Alam & Agarwal, female : A. External genitalia; B. Antenna; C-D. *Leptomastix nigrocoxalis* Compere : C. Antenna, female; D. Antenna, male; E. *Leptomastix salemensis* Hayat, Alam & Agarwal, female : Antenna. *(Modified from different authors).*

Leptomastix nigrocoxalis Compere

(Fig. 181)

1928 *Leptomastix nigrocoxalis,* Compere, *Univ. California Pub. Ent.,* 4 : 219.

1975 *Leptomastix nigrocoxalis,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 16.

Female : Length 2.07 mm. Head orange-yellow, with a blotch on either side of occiput behind eyes; antennae dark brown, scape

yellow below and brown above; pronotum yellowish-orange with 3 brown patches; mesonotum orange-yellow; wings hyaline; fore legs yellowish-orange, with metatarsus and distal 0.50 of fifth tarsal segment light brown; middle coxae black, otherwise uniformly coloured orange-yellow; hind legs uniformly coloured yellowish-orange.

Head wider than long; frontovertex more than 1.50 times wider than long, about 0.50 of head width; eyes bare; ocellocular and ocelloccipital spaces equal; gena much shorter than eye; toruli closer to orbits than to mouth; mandibles with 2 acute teeth; maxillary palpi with 4 and labial palpi with 3 segments; scape about 5 times longer than thick, longer than pedicel and first funicular segment combined; pedicel about 0.33 of scape, about 0.67 of first funicular segment, almost 2 times as long as thick; funicular segments decrease in length and increase in thickness distad, first funicular segment more than 4 times longer than thick, sixth 2 times as long as thick; club 3-segmented, slightly thicker than funicle, shorter than preceding 2 segments combined; first funicle to terminal club segments respectively with 5,4,6,7,8,5 and 4 sensoria.

Front margin of pronotum acutely notched in the middle, hind margin uniform with 16 setae; mesoscutum slightly infuscate on the anterior border; axillae broadly contiguous with 7 prominent setae; propodeum short in the middle, mesopostphragma broadly notched at apex; fore wings well developed, less than 3 times longer than wide; costal cell broad; vein *sm* long, about 6 times longer than *m;* vein *m* shorter than *pm;* vein *st* shorter than either; 16 setae on vein *sm,* speculum interrupted by 6 rows of setae; marginal fringe short; hind wings costal cell; marginal fringe long; fore coxae with 4 long setae on distal 0.50 outside; middle spur equal to metatarsus; metatarsus equal to the following 2 tarsal segments combined; tip of tibiae with 11 pegs; metatarsus, tarsal segments 2-4 with 11, 7, 5 and 3 pegs respectively; hind legs 4 long setae outside on coxae distally.

Abdomen long, equal to head and thorax combined; cercal plates stout near base; ovipositor concealed; subgenital plate with a notch behind followed by a complete mid-longitudinal groove; oblique ridge on either side of groove near the posterior margin present; anterolateral apodemes distinct; outer plates of ovipositor short, subtriangular, broad at base, narrow at apex, with an oblique ridge in the middle, extending through the length of plate; first valvifers almost semi-circular with base a little concave, articular knobs distinct; second valvifers with dorsal margin thickened in the apical 0.50, ventral margin thickened throughout; third valvulae subconical, imperceptibly articulated at the apex of second valvifers.

Male : Length 1.44 mm. Like female except for the following : Scape slightly less than 4 times longer than thick; pedicel short, almost as long as thick, more than 0.33 length of the following

segment; first funicular segment more than 4 times longer than thick; following segments becoming gradually longer; sixth funicular segment more than 2 times as long as thick; club unsegmented, more than 6 times longer than thick, longer than preceding 2 segments combined; fore and hind tibiae and tarsal segments uniformly dusky.

Abdomen dark brown.

Type locality : Unknown.

Distribution : Arakonum, Avadi (Madras), Srirangam, Shencottah, Dindigal, Tuticorin, Karunagapally, Kalamasseri, Kottayam, Jogindernagar, Nasik, Manmad, Goa, Hubli, Hissar, Hoshiarpur, Bhatinda, Patiala, Nabha.

Hosts : Centrococcus, Nipaecoccus vastator, Icerya aegytiaca, Centrococcus insolitus (Green). Endoparasite of *Pseudococcus citri* Risso on *Citrus medica L.*

Gyranusoidea Compere

1947 *Gyranusoidea,* Compere, *Univ. Calif. Mon. Ent.,* 8 : 1-24.

1975 *Gyranusoidea,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Pub.* (Zool.) 10 : 20.

Body pale lemon-yellow to whitish; wings hyaline; scape basally enlarged; pronotum with front margin deeply notched in the middle, hind margin slightly convex; third valvulae ill-defined blunt extensions of second valvifers; frontovertex finely punctate; costal cell in fore wing narrow; maxillary palpi with 3, labial palpi with 2 segments; vein *st* shorter than *pm;* scape somewhat expanded beneath; funicular segments 6; body not depressed; mandibles bidentate.

Type-species : Gyranusoidea citrina Compere.

KEY TO SPECIES

1. Scape about 2 times longer than wide; vein *st* 0.50 of vein *pm;* first and second funicular segments subequal; funicle and club dark	*G. indica* Shafee *et al.*
Scape slightly less than 3 times longer than wide; first funicular segment distinctly shorter than second; club about 4 times longer than thick; vein *m* much shorter than vein *pm*	*G. flava* Shafee *et al.*

Gyranusoidea flava Shafee, Alam & Agarwal

(Fig. 182)

1975 *Gyranusoidea flava,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 21.

Female : Length 1.39 mm. Body yellow; head whitish-yellow; antennae yellowish-brown, except enlarged infuscated protion of scape; thorax yellow; pronotum infuscated in the middle; legs orange-yellow; abdomen pale yellow.

Head minutely punctate, slightly wider than long; frons between eye less than 0.50 of head width; frontovertex slightly longer than wide; ocellar triangle acute-angled; ocellocular space less than ocellar diameter; ocelloccipital space and less than ocellar diameter; eyes sparsely setose; gena shorter than eye; mandibles bidentate; maxillary palpi with 3 and labial palpi with 2 segments respectively; scape slightly less than 3 times longer than thick; pedicel distinctly longer than first funicular segment; first funicular segment 1.50 times longer than thick, distinctly shorter than second segment; funicular segments distinctly longer than thick; club about 4 times longer than thick, slightly shorter than preceding 3 segments combined.

Mesoscutum about 1.50 times wider than long; axillae triangular, contiguous; scutellum as long as scutum; fore wings hyaline, slightly more than 2 times longer than wide; costal cell narrow; vein *m* and *st* subequal and slightly more than 0.50 of *pm;* vein *st* dilated at apex; speculum incomplete; middle tibiae with 6 pegs at tip; middle spur longer than metatarsus.

Abdomen as long as thorax; first valvifers semi-circular with one of the articular knobs well developed; third valvulae ill-defined blunt extensions of second valvifers.

Type locality : Naini Tal (Kumaon Himalaya)

Distribution : Haldwani, Naini Tal, Nasik, Bhubaneswar

Host : Planococcoides robustus Ezzat & McConnell on *Mangifera indica* Linn.

Gyranusoidea indica Shafee, Amam & Agarwal

(Fig. 182)

1975 *Gyranusoidea indica,* Safee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 22.

Female : Length 1.45 mm. Resembles *G. flava* Shafee *et al.,* except in the following characters :

Head yellow, except for the infuscated band between antennal sockets and lower orbital border; antennae dark, except for the subapically white scape and distal 0.50 of pedicel; scape much dilated, about 2 times longer than thick; first and second funicular segments subequal, about 2 times as long as thick; club slightly more than 3 times longer than thick.

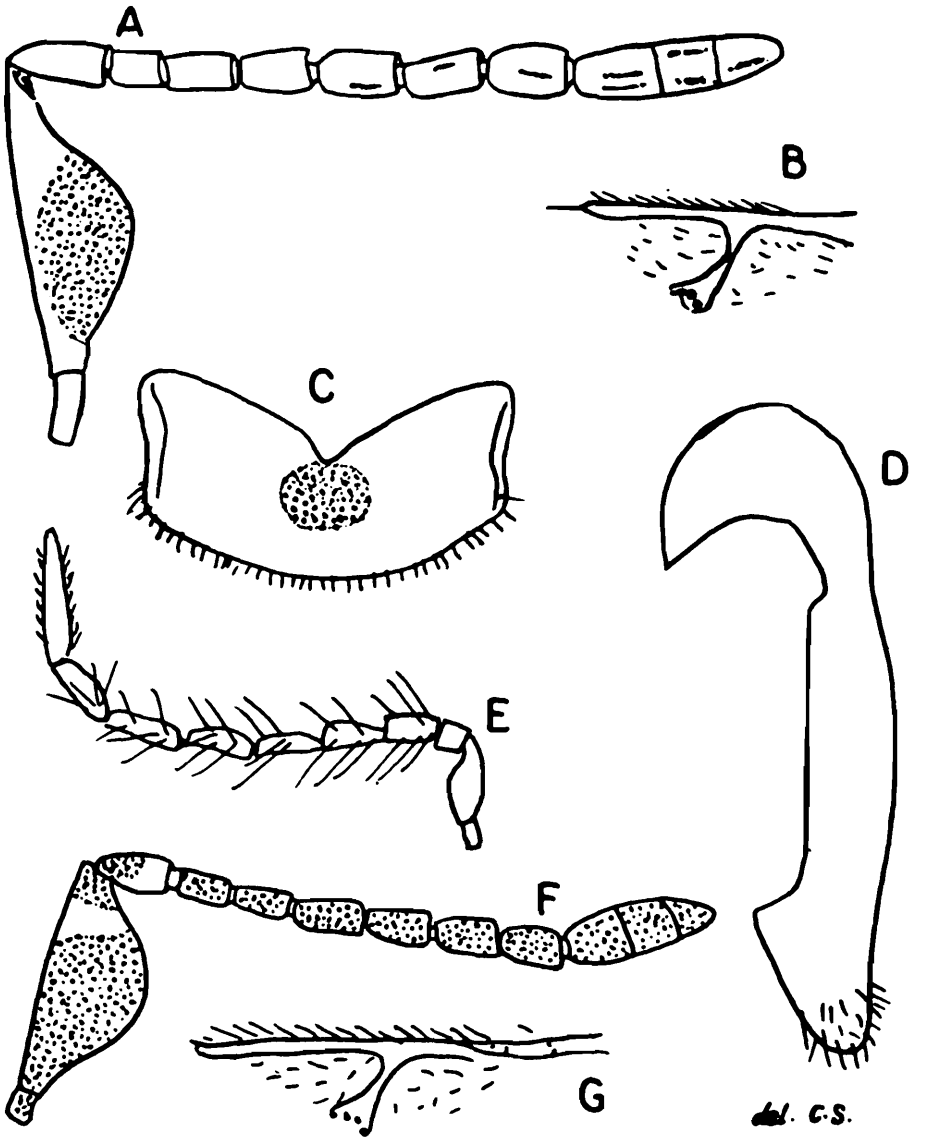

FIG. 182. A-E. *Gyranusoidea flava* Shafee, Alam & Agarwal : A. Antenna, female, B. Stigmal venation, female; C. Pronotum, female; D. second valvifer, female; E. Antenna, male; F-G. *Gyranusoidea indica* Shafee, Alam & Agarwal, female; F. Antenna; G. Stigmal venation. *(Modified from different authors).*

Thorax yellowish-brown, partly white; vein *m* distinctly longer than vein *st;* vein *st* about 0.50 of *pm,* dorsum of abdomen infuscated, rest orange-yellow, distinctly longer than thorax.

Type locality : Bihar : Sasaram

Distribution : Arrah, Aligarh

Host : Nipaecoccus sp. on *Zyziphus* sp.

Leptanusia De Santis

1963 *Leptanusia,* De Santis, *Ann. Comm. Invest. Cient. Prov. Buenos Aires,* 4 : 80.
1975 *Leptanusia,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 9.
1975 *Leptanusia,* Hoffer, *Stud. ent. Forest Praghae,* 2 (6) : 111-116.

Female : Head as wide as thorax; viewed in front roundly subtriangular; frontoverteax wide, scrobe short, not deep; eyes large, bulging, hairy; ocellar triangles equilateral; ocellocular space subequal to interocllar space; mandible bidentate; maxillary palpi with 4 and labial palpi with 3 segments; antennae shorter than body; densely hairy; inserted near mouth; scape expanded laminately; pedicel subconic; funicle with 6 segments, becoming gradually shorter; club triarticulate, subequal to the 2 preceding segments combined, slightly swollen; pronotum short, parapsidal furrows trace only anteriorly; axillae united; scutellum short, subtriangular, fore wing wide, hyaline or incompletely and ultimately infumate; vein *m* 4 times as long as thick, *st* longer than *m; pm* equal to *st,* speculum incomplete; middle tibial spur equal to metatarsus; abdomen subtriangular, shorter than thorax, hairy; ovipositor short and exserted; outer plates of ovipositor of almost uniform width, with a ridge along its dorsal margin; apex rounded.

Male : Unknown

Type-species : Leptanusia pseudococci (Brèthés). This genus is related to *Leptomastidia* Mercet.

KEY TO SPECIES

1. Head dorsum slightly less than 2 times as wide as long; width of frontovertex more than 0.33 of head width; scape brown with a long white strip in middle — *L. indica* Hayat *et al.*

   Head dorsum more than 2 times as wide as long; width of frontovertex about 0.33 of head width; scape white, with a long patch above at distal 0.50 and an irregular patch below — *L. quadrii* Hayat et al.

Leptanusia indica Hayat, Alam & Agarwal

(Fig. 183)

1975 *Leptanusia indica,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 9.

Female : Length 1.34 mm. Body yellow; head yellow, face and checks paler; frontovertex finely reticulate, with white and some brown hairs; scape brown with a long white strip in the middle, rest of antenna dark brown; thorax yellow, a patch in centre of pronotum, sides of propodeum and metanotum pale brown; fore wing with an oblique patch behind vein *sm,* a triangular area of

coloured setae at posterior 0.50 opposite; veins *m* and *st* a transverse band of dark coloured setae distad of veins; rest of wing with hyaline setae; fore coxae and trochanters fuscous; femora largely, tibiae above at extreme base brown; last tarsal segment fuscous; rest of leg pale yellow; middle coxae, trochanters at base, femora on both margins, a cross band at apex and extreme base of tibiae and their dorsal margins black; abdomen dark brown to dusky on dorsum, pale on sides and venter

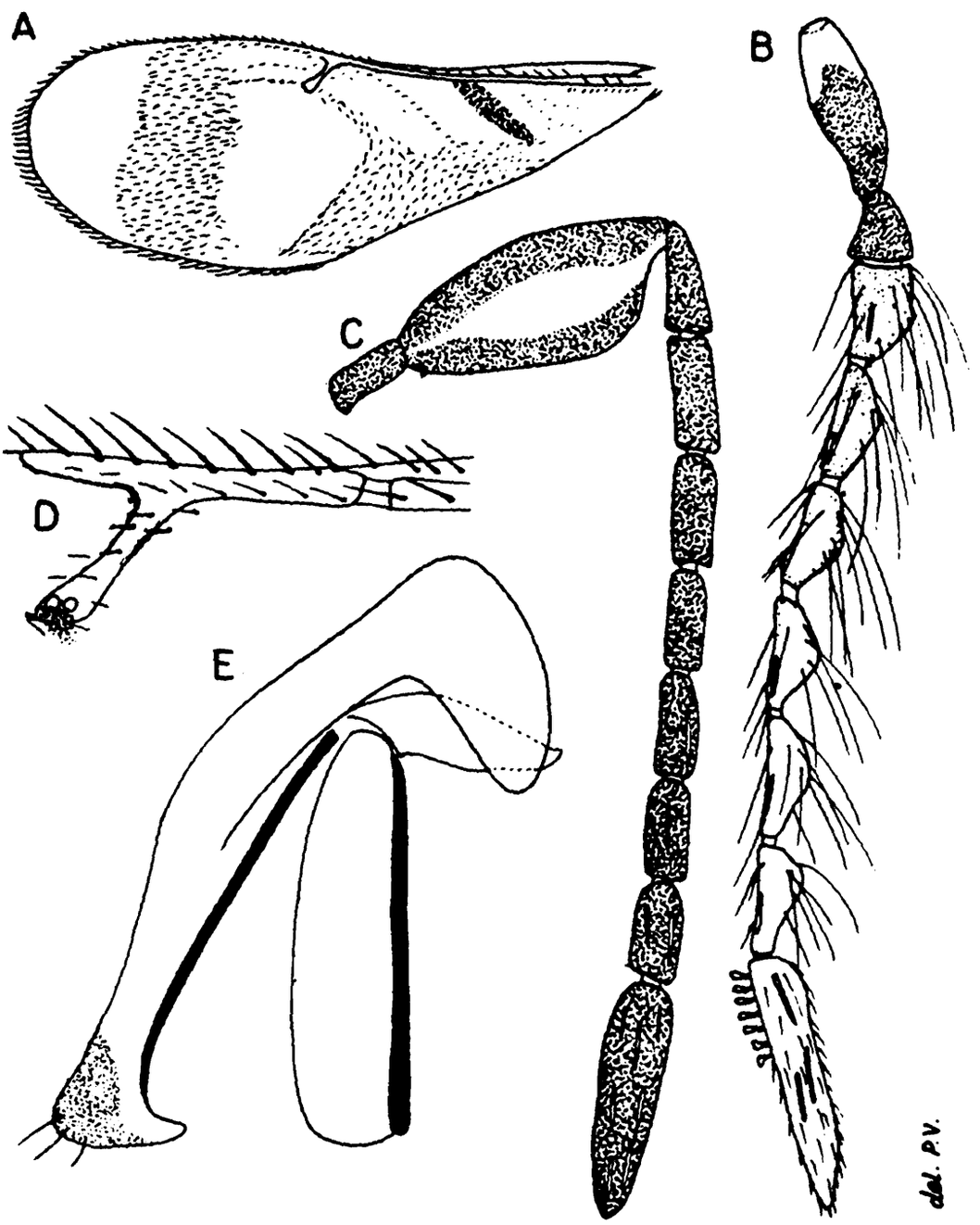

FIG. 183. *Leptanusia indica* Hayat, Alam & Agarwal : A. Fore wing, female; B. Antenna, male; C. Antenna, female; D. Stigmal venation, female; E. Genitalia, female. *(Modified from the protologists).*

Frontovertex less than 2 times as wide as long, more than 0.33 of head width; ocellocular and postocellar spaces subequal, gena shorter than eye; head in front slightly wider than long, suboval; eyes about 0.75 of head, with thick, short hairs; antennae inserted near facial margin; scrobes shallow, triangular; mandibles bidentate; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape flattened and expanded below, slightly less than 3 times as long as thick; pedicel 2.50 times as long as thick, subequal to first funicular segment; funicular segments longer than thick, first segment 3 times and sixth segment 2 times as long as thick; club slightly shorter than the preceding 3 funicular segments combined.

Thorax finely reticulate, with brown setae; pronotum of almost uniform width, front margin deeply concave in the middle, axillae narrowly confluent; scuttellum as long as mesoscutum, slightly wider than long, apex narrowly rounded; mesopostphragma with a wide notch apically; fore wings 2.75 times as long as wide; speculum broad, posteriorly cut off by several rows of discal setae; veins *m : pm : st* ratio 8 : 4 : 5; marginal fringe very short; hind wings 4.50 time as long as wide; marginal fringe less than 0.33 of disc; middle tibial spur subequal to metatarsus; tip of tibia and tarsal segments 1-4 with 5,9,6,4 and 4 pegs respectively.

Abdomen dark brown to dusky above; pale laterally; subtriangular, longer than thorax; anterior margin of subgenital plate concave, posterior margin with a shallow notch in the middle; first valvifers obliquely triangle-shaped, articular knobs prominent; second valvifers short, with a ridge along outer margin; ovipositor about 0.50 of abdomen, concealed.

Male : Differs from female as follows : Body completely black with face and gena yellow; apical 0.67 of scape brown, pedicel pale brown, funicular segment and club yellow, more or less suffused dusky; legs less darkly than in female; hind femora brown; wings hyaline; digitus volsellaris with 2 long denticles.

Type locality : Guntur

Distribution : Guntur, Aligarh

Host : Ferrisia virgata (Cockl)., on *Ficus* sp.

Leptanusia quadrii Hayat, Alam & Agarwal

(Fig. 184)

1975 *Leptanusia quadrii*, Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 12.

Female : Length 1.83 mm. Scape whitish, with a long patch above at distal 0.50, an irregular patch below of 0.50 blackish; pedicel above and whole of club black; funicular segments brownish-yellow;

fore wings more densely setose than in *L. indica,* with dark coloured setae and with 3 hyaline areas; legs yellow; pegs on tip of middle tibia and tarsal segments brown; abdomen white to pale yellow.

Head with dorsum more than 2 times as wide as long; frontovertex about 0.33 of head width, longer than wide; ocellar triangle equilateral; ocellocular space less than ocelloccipital; head in front distinctly wider than long; scape flattened, 3 times as long as thick; sixth funicular segment 1.25 times as long as thick.

Thorax as in *L. indica,* but axillae more broadly confluent; fore wings 2.50 times as long as wide, disc with 3 hyaline areas, 2 in the middle, one larger and irregular; second hyaline area elongate and small, distal to the large area; third semi-circular area covering apex; venation more or less similar to *L. indica;* middle tibial spur equal to metatarsus; tip of tibia and tarsal segments 1-4 with 9, 11, 8.8 pegs respectively.

Abdomen longer than thorax; ovipositor concealed.

Male : Similar to female, but differs as follows : Scape basally and ventrally at tip white, rest and pedicel brownish-black; funicular segments brown, becoming yellowish-brown distally; middle coxae fuscous-brown.

Type locality : Goa : Vasco-da-Gama

Host : Ferrisia virgata (Cockpl.) on *Lantana camara*

Leptomastidea Mercet

1916 *Leptomastidea,* Mercet, *Bol. Soc. Esp. Hist. Nat.,* 16 : 112.
1918 *Tanaomastix,* Timberlake, *Pub. Ent. Calif. Univ.,* 1 (8) : 362-364.
1921 *Leptomastidea,* Mercet, *Fauna Iberica,* 107.
1923 *Leptomastidea,* Timberlake, *Proc. ent. Soc.,* 25 (3) : 59.
1924 *Leptomastidea,* Mecret, *Bol. Soc. Esp. Hist. Nat.,* 24 : 252.
1952 *Leptomastidea,* Risbec, *Ent. Mem. Inst. Sci. Madagascar Ser.,* 2 : 5, 10-15.
1953 *Leptomastidea,* Ferrière, *Mitt. Schweiz. ent. Ges.,* 26 (1) : 17.
1963 *Leptomastidea,* De Santis, *Ann. Com. Invest. Cient. Prov. Buenos Aires,* 4 : 88.
1965 *Leptomastidea,* Trjpitzin, *Ent. Rev.,* 44 (4) : 517.
1977 *Leptomastidea,* Trjpitzin, *Trudi Vses. ent. Obsh.,* 58 : 145.
1979 *Leptomastidea,* Krombein *et al.,* Hymen. N. America, 1 : 914.

Female : Body without metallic reflections; frons very wide; occipital border acute; eyes large, pubescent or glabrous; ocellar triangle equilateral; ocellocular space equal to interocellar space; mandibles bidentate; maxillary palpi with 3 and labial palpi with 2 segments; antennae filiform, inserted close to the mouth, with 11 segments; 1.1.6.3; scpae elongate cylindrical; pedicel longer than wide, equal to the following segments; funicle finely pubscent; segments cylindrical, longer than thick; club long, slightly thicker than funicle, parapsidal furrows absent.

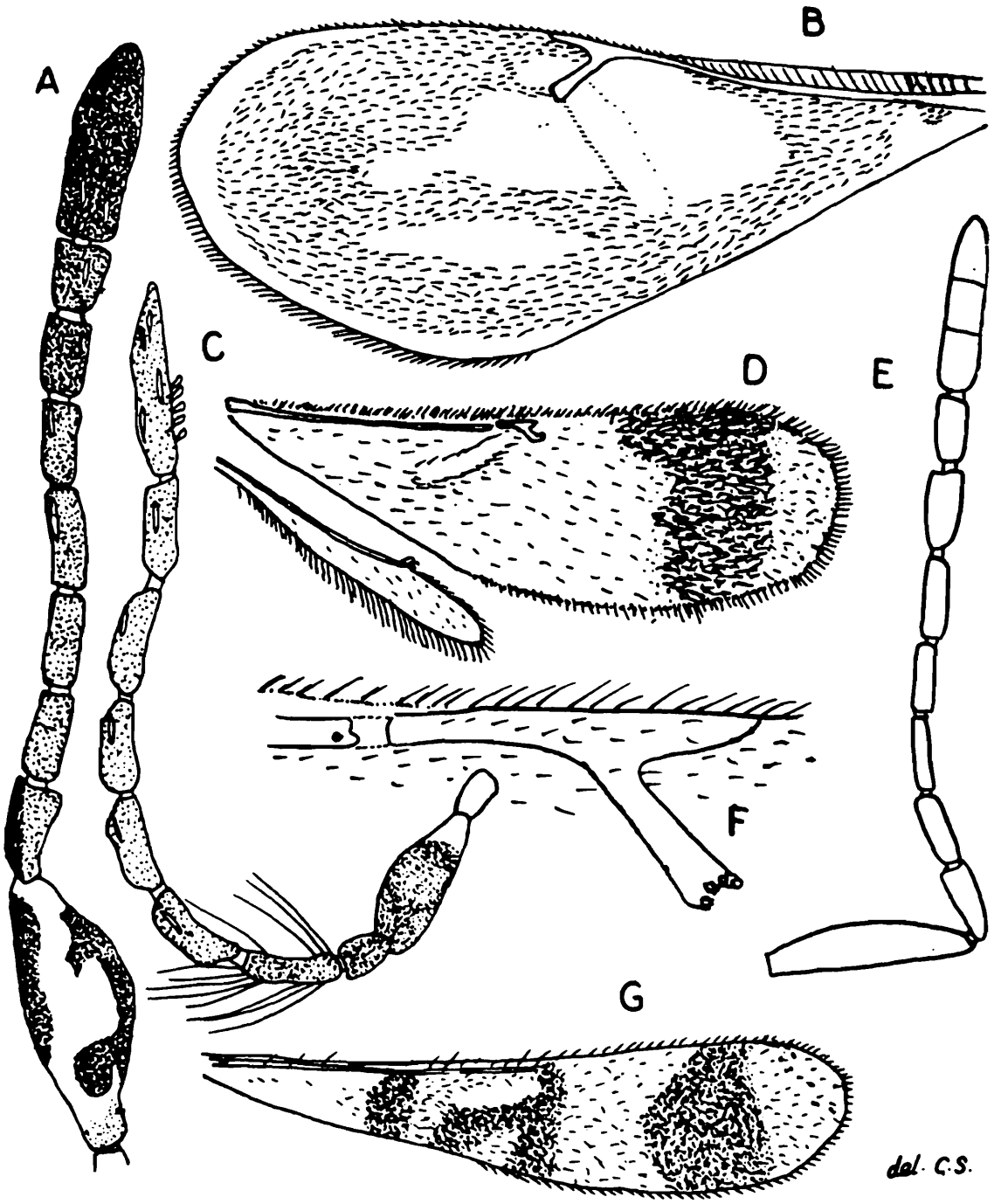

FIG. A-C. *Leptanusia quadrii* Hayat, Alam & Agarwal; A. Antenna, female; B. Fore wing, female; C. Antenna, male; D-F. *Leptomastidea indica* Subba Rao, female : D. Fore and hind wing; E. Antenna; F. Stigmal venation; *(Modified from different authors).* G. *Leptomastidea sayadriae,* Mani & Kaul, male; Fore wing.

Axillae contiguous or nearly so; scutellum flat, triangular; wings long, with a transverse infumate band; vein *sm* long, straight; vein *m* slightly longer than thick; *st* subequal to *m; pm* longer than *st;* speculum reduced to an oval spot behind vein *m;* hind wing triangular, long; legs long; middle tibial spur equal to metatarsus; middle tarsus stout; middle metatarsus equal to the following 3 segments combined; hind tibial spur single.

Abdomen triangular, naked or nearly bare, longer than thorax, reduced apically.

Male : Eyes small; antennae inserted on level of lower orbital border; scape compressed; pedicel as long as thick; funicle with long, verticillate hairs; fore wing longer than in female, with infumate band more faint; abdomen elongate but shorter than thorax, subtruncate apically; general colour of body more obscure than in female.

Type-species : Leptomastidea aurantiaca Mercet

KEY TO SPECIES

1	Ocellocular space equal to about 2 ocellar diameters; thorax reticulate	*L. indica* Subba Rao
	Ocellocular space equal to 3 ocellar diameters; thorax shagreened	*L. sayadriae* Mani & Kaul

Leptomastidea indica Subba Rao

(Fig. 184)

1967 *Leptomastidea indica,* Subba Rao, *Bull. ent.,* 8 (1) : 1-7.

1975 *Leptomastidea indica,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 24. (preoccupied in Rao) *Syn. Nov.*

Female : Length 0.95 mm. Body brown to dark brown; head and ocelli white; antennae dark brown, scape ventrally and pedicel in apical 0.50 white; thorax brown; wings hyaline, legs orange-yellow, except middle coxae and middle femur above black; abdomen whitish, except the black distal 0.50 of tenth tergum.

Head minutely punctate; frontovertex about 0.50 of head width, as long as wide; ocellar triangle equilateral; ocellocular and ocelloccipital spaces equal to 2 ocellar diameters; gena shorter than eye; mandibles bidentate; eyes bare; antennae inserted near mouth; scape elongate, about 4 times longer than thick; pedicel longer than first funicular segment; funicular segments 1,3 and 6 subequal; first segment 3 times longer than thick, sixth slightly more than 2 times longer than thick; club slightly longer than preceding 2 funicular segments combined.

Thorax reticulate, sparsely setose, scutum wider than long; axillae contiguous; scutellum longitudinally reticulate, as long as wide, longer than scutum, with 6 pairs of setae; fore wings about 3 times longer than wide; costal cell very narrow; vein *sm* with 15 long setae; vein *m* about as long as *pm*; longer than *st;* vein *st* dilated distally, with 4 sensoria; speculum incomplete; marginal fringe spaced by a distance equal to 0.25 of hair length; hind wings narrow, about 8 times longer than wide; middle tibial spur subequal to metatarsus.

Abdomen longer than thorax; paratergites long and narrow; subgenital plate reaching tip of abdomen.

Type locality : Delhi

Distribution : Delhi, Nagpur, Calcutta, Bihar : Darbhanga

Host : Ferrisia virgata Cockerell

This species differs from all the described species in having hyaline wings; funicular segments first, 3 and 6 subequal; first segment 3 times longer than thick; vein *m* as long as vein *pm*.

Leptomastidea sayadriae Mani & Kaul

(Fig. 184)

1974 *Leptomastidea sayadriae,* Mani & Kaul, *Mem. School Ent.*, 3 : 70.

Male Length 1.30 mm. Body brown, antennae and legs yellowish-brown; wing banded, veins brown.

Head in front width to length 100 : 92. face shagreened, interorbital space at middle of face 0.60 of head width, ocellocular space equal to 3 ocellar diameters, interocellar space equal to ocellocular space, front ocellar space equal to ocellocular space; gena 0.42 of eye; maxillary palpi with 4 segments, first segment 1.50 times as long as thick, second segment 1.55 times the first and 2 times as long as thick, third segment 0.50 of the second, fourth 3.70 times the third and 5 times as long as thick; mandibles bidentate; antennae inserted at level of lower orbital border, segments 9 :1.1.6.1; scape slender, uniformly thick, 5.40 times longer than thick; pedicel short, about 0.15 of scape, thicker apically than basally; first funicular segment longest; 6 times pedicel; second segment a little shorter than first; third subequal to the second, segments 4-5 subequal, about 0.90 of third sixth segment a little shorter than the fifth; club about 1.50 times the preceding segment; funicular segments with verticillate setae.

Thorax shagreened, pronotum : mesonotum : scutellum ratio 20 : 100 : 73; mesonotum almost as long as wide, scutellum shagreened, finely reticulate, a little wider than long, axillae contiguous; fore wing 5 times as long as wide; veins *sm : m : pm : st* ratio 800 : 100 : 33 : 50; speculum extends to 0.50 of wing width; fore femur slender, 6 times as long as thick; tibia 1.20 times femur; tarsus 1 10 times tibia; middle femur slender, 10 times as long as thick; tibia little over 1.30 times femur, tip with a circlet of sharp teeth, spur 1.20 times metatarsus; tarsus 0.60 of tibia, metatarsus 0.45 of tarsus and with double series of 10 spines beneath, second tarsal segment 0.30 of metatarsus, third a little shorter than the second, fourth 1 10 times the third and equal to the second, fifth segment 1.30 times the fourth; hind femur 0.77 of mid femur, about 7 times as long as thick; tibia 1.30 times femur, spur 0.30 of metatarsus; tarsus 0.73 of tibia, metatarsus about 0.40 of tarsus; segments 2-4 subequal, about 0.40 of metatarsus; fifth 1.30 times the fourth.

Abdomen smooth 0.50 of body, aedeagus with 2 hooklets.

Type locality : Western Ghats

Distribution Western Ghats

Host Unknown

This species resembles *Leptomastidea aurantiaca* Mercet, but differs in the wing bands being darker and wider, in the proportions of antennal segments, namely funicular segments being relatively longer, shorter pedicel and club not being equal to preceding 2 segments combined.

Doliphoceras Mercet

1919 *Pholidoceras,* Mercet, *Bol. Soc. Esp. Hist. Nat.,* 19 : 99.
1921 *Doliphoceras,*Mercet, *Fauna Iberica,* 91.

Female : Head wider than long in front; eyes relatively minute, pubescent; inner orbital border parallel; frons wide; mandible bidentate; maxillary palpi with 3 and labial palpi with 2 segments; antennae stout, setose, inserted close to the mouth, with 11 segments : 1.1.6.3 : antennal segments well separated; pedicel as long as the first funicular segment; funicular segments cylindrical.

Mesonotum entire; axillae contiguous; scutellum flat, triangular, as long as mesonotum; wings hyaline; vein *m* longer than thick, a little shorter than *st; pm* shorter than *m;* speculum well developed, interrupted in the posterior 0.33 of its length; middle tibial spur a little shorter than metatarsus; metatarsus internally with fine setae and acute spines.

Abdomen a little longer than thorax, triangular; ovipositor distinctly visible.

Male : Head wider than long; scape slightly expanded in the middle; pedicel much shorter than first funicular segment; funicular segments cylindrical, with long, verticillate setae; sixth segment with one row of sensillae internally; club entire, lanceolate, equal to the preceding 2 segments combined; abdomen oval, broadly rounded apically.

Type-species : Doliphoceras integralis (Mercet)

KEY TO SPECIES

1. Fore wings more than 2.50 times longer than wide; pedicel subequal to first funicular segment.	*L. gracilis* Hayat
Fore wings a little more than 2 times longer than wide; pedicel distinctly longer than first funicular segment.	*L. tachikawai* Shafee, Alam & Agarwal

Doliphoceras gracilis Hayat

1969 *Doliphoceras gracilis,* Hayat, *Bull. Ent.,* 10 (2) : 114.

Female : Length 1.56 mm. Head black; antennae brownish-black; thorax black; legs yellowish-white except brown base of fore

coxae, entire middle and hind coaxe; hind femora except base and apex brown; abdomen black, tenth tergum testaceous.

Head dorsum 2.50 times wider than long, frontovertex reticulate, 0.50 of head width, distinctly wider than long; ocellar triangle obtuse; ocelloccipital space less than ocellar diameter; gena equal to eye; with a distinct subocular suture; antennal sockets well removed from facial margin; scrobes bell-shaped; scape nearly 4 times longer than thick; pedicel less than 2 times as long as thick and subequal to first funicular segment; funicular segments longer than thick, subequal; club 3 segmented, not thicker than preceding segment, shorter than preceding 3 segments combined.

Mesoscutum reticulate, densely hairy; scutellum finely reticulate, wider than long, narrowly rounded apically; wings hyaline, fore wings more than 2.50 times longer than wide; vein *m* about as long as *st, pm* 0.33 of *st;* middle tibial spur shorter than metatarsus, tip of tibia and tarsal segments 1-4 with 6,6,4,4 and 3 pegs respectively.

Abdomen elongate, about 2.50 times longer than wide, longer than head and thorax combined; ovipositor 0.20 of abdomen; cercal plates at basal fifth; subgenital plate reaching a little beyond apex of abdomen.

Type locality : Aligarh

Distribution : Kerala, Uttar Pradesh

Doliphoceras tachikawai Shafee, Alam & Agarwal

(Fig. 187)

1975 *Doliphoceras tachikawai,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 26.

Female : Length 1.08 mm. Body dark, antenna brown, except for darker radicle and basal part of pedicel; wings hyaline; coxae brown, rest of legs yellowish-brown; abdomen yellow except for the brown tergite.

Head aciculately punctate, slightly wider than long in facial view; width of frontovertex at front ocellus about 0.50 of the head width; frontovertex about as long as wide; ocellar triangle equilateral, ocellocular and ocelloccipital spaces subequal to ocellar diameter; eyes bare; gena longer than eye; subocular suture distinct; antennae inserted just above the oral margin; prominence between antennal insertions about 0.50 of the width of frons between eyes; mandibles bidentate; maxillary palpi with 3 and labial palpi with 2 segments respectively; scape elongate, about 4.50 times longer than thick; pedicel distinctly longer than first funicular segment; funicular segments distinctly longer than thick, gradually longer and thicker distad; club 3 segmented, slightly longer than preceding 3 funicular segments combined.

Pronotum of uniform width; scutum slightly less than 2 times wider than long; axillae meeting; scutellum about as long as wide, longer than scutum; scutum and scutellum with different sculpture; fore wings slightly more than 2 times longer than wide; costal cell broad; vein *sm* long and with 13 setae; vein *m* distinctly longer than *pm,* about as long as vein st; marginal fringe short, spaced by a distance equal to 0.33 of their length; hind wings about 5 times longer than wide; marginal fringe spaced by a distance equal to 0.25 of their length; middle tibial spur slightly shorter than metatarsus; 3 stout pegs at tip of middle tibiae.

Abdomen distinctly longer than thorax; paratergites long, widened in the middle; second valvifers uniformly wide, with imperceptible third valvulae; ovipositor concealed; subgenital plate reaches apex of abdomen.

Male : Length 0.90 mm. Like female except as follows : Width of frontovertex at median ocellus more than 0.50 of head width; prominence between antennal sockets 0.33 of the width of frontovertex; gena about 2 times eye; scape long; pedicel distinctly shorter than first funicular segment; funicle 6 segmented, all longer than thick, with long hairs; club unsegmented with short hairs.

Type locality : Jaipur

Distribution : Bharatpur, Jaipur

Host : Coccidohystrix insolitus (Green) on *Achyranthes* sp.

Callipteroma Motschulsky

1863 *Callipeteroma,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 : 35.
1900 *Callipteroma,* Ashmead, *Proc. US nat. Mus.,* 22 : 402.
1904 *Callipteroma,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 304.
1909 *Callipteroma,* Schmiedeknecht, *Gen. Ins.,* 97 : 254.
1921 *Callipteroma,* Mercet, *Fauna Iberica,* 115.
1938 *Callipteroma,* Mani, *Cat. Indian Ins.,* 23 : 94.

Female : Head lenticular, viewed from side frons very long; ocellar triangle acute; ocellocular space equal to interocellar space; eyes large; ovate, naked; mandible bidentate; antennae filiform, very long, inserted on level of the lower orbital border, with 11 segments : 1.1.6.3; scape cylindrical, equal to first funicular segment; pedicel short; funicular segments longer than thick; club a little thicker than funicle, rounded apically.

Mesonotum shiny, without parapsidal furrows; axillae flat, contiguous; scutellum shiny, triangular, rounded; propodeum short, laterally densely pubescent; mesopleura large; wings held vertically upwards at rest, largely hyaline, rounded, without speculum, spotted brown; vein *m* contiguous with front margin; vein *m* and *st* subequal;

pm very short; hind wing largely infumate; legs long; middle tibial spur long, pointed; middle metatarsus equal to the four segments combined; abdomen triangular, strongly elongate; ovipositor concealed.

Male : Interocellar space less than ocellar space; antennae longer than body; radicle equal to pedicel; scape equal to first funicular segment; funicular segments gradually becoming shorter; setose, pedicel subglobose; club probably entire; abdomen short; wing as in female.

Type-species : Callipteroma quinqueguttata Mostschulsky

KEY TO SPECIES

1. Fore wing with 4 spots in the middle and one narrow spot apically — *C. sexguttata* Motschulsky
   Fore wing with 5 spots in the middle and one spot apically — *C. sexguttata* Motschulsky

Callipteroma quinqueguttata Motschulsky

1863 *Callipteroma quinqueguttata,* Motschulsky, *Bull. Soc. Imp. nat. Moscou,* 36 (3) : 36.

1973 *Callipteroma quinqueguttata,* Mani & Kaul, *Mem. School Ent.,* 2 : 71.

Male : Length 2.00 mm. Body blackish-brown; radicle, scape and pedicel brown, rest of antenna black; fore femur and tarsus brown, tibia largely blackish-brown; middle and hind legs, except brown tarsi, blackish-brown; fore wing spotted and infuscated with 4 hyaline spots in the middle and one apical spot which is very narrow; hind wing infuscated in the apical 0.50.

Head in front width to height 100 : 94; interobital space below about 0.50 of head width; face with fine reticulate microsculpture; ocellocular space 0.60 of interocellar space, front ocellar space a little less than ocellocular space; maxillary palpi with 5 segments, first 3 segments subequal, fourth about 2 times the third, fifth smallest, about 0.16 of fourth; antenna inserted almost at the lower borders of eye; long with short pubescence; 1.25 times body, segments 11 : 1.1.6.3; scape, all funicular segments elongate, gradually becoming shorter apically; club equal to the preceding 2 segments combined.

Mesoscutum and scutellum with fine reticulate microsculpture; fore wing length to width 100 : 36; veins *sm : m : pm : st* ratio 34 :100 : 23 : 16; hind wing about 0.33 of fore wing; middle femur long and slender, tibia distinctly longer than femur, tibial spur almost equal to metatarsus; metatarsus 0.33 of tibia, equal to other segments combined; hind femur about 0.80 of middle femur; tibia 1.20 times femur; tibial spur a little less than 0.50 of metatarsus; metatarsus about 0.20 of tibia, segments 2-4 subequal and each 0.60 of metatarsus; fifth a little shorter than fourth.

Type locality Mt. Patannas (Ceylon)

Distribution : Ceylon; India : Panchgani (Western Ghats)

Callipteroma sexguttata Motschulsky

(Fig. 185 & 186)

1963 *Callipteroma sexguttata,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 37.
1921 *Callipteroma sexguttata,* Mercet, *Fauna Iberica, Encirtidos,* Eos, 119.
1938 *Callipteroma sexguttata,* Mani, *Cat. Indian Ins.,* 23 : 95.
1963 *Callipteroma sexguttatum,* Trjpitzin, *Trudi Vses. ent. Obsh.,* 52 : 48.
1973 *Callipteroma sexguttata,* Mani & Kaul, *Mem. School Ent.,* 2 : 67.

Male : Length 1.30 mm. Body largely dark brown; radicle, scape and pedicel yellowish-brown, rest of antenna brownish-black; fore leg yellowish-brown, middle femur brown, tibia and tarsus yellowish-brown, hind leg brownish-black; fore wing spotted and infuscated with 5 hyaline white spots in the middle and one apical spot.

Head in front width to height 100 : 90; face with fine reticulate microsculpture, interorbital space below distinctly over 0.50 of head width; ocellar triangle equilateral; ocellocular space a little over front ocellar space; antenna inserted almost on level of lower orbital border long; segments 9 and an elongate radicle; flagellum with long hairs; scape uniformly cylindrical and almost equal to first funicular segment; pedicel nearly 0.25 of scape; funicular segments 6; first and second funicular segments subequal, remaining funicular segments gradually becoming shorter; club elongate, solid, little shorter than preceding 2 segments combined; maxillary palpi with 5 segments; first and second segments almost equal, third a little shorter than the second; fourth distinctly longer than third and more slender, fifth 0.60 of the fourth and nearly as thick, bearing at its tip a transparent bristle, subequal to fourth and fifth palpal segements combined.

Mesonotum 2 times as wide as long; axillae contiguous, scutellum almost as wide as long, and a little shorter than mesonotum; mesonotum and scutellum with fine, reticulate microsculpture; fore wing length to width 100 : 30; veins *sm : m : pm : st* ratio 37 : 100 : 19 : 19; hind wing about 0.33 of fore wing; middle femur long and uniformly cylindrical but slightly thickened at tip, about 6 times as long as thick, tibia a little more than 1.50 times femur, tip of tibia with acute teeth, tibial spur subequal to metatarsus; tarsus about 0.70 of tibia, metatarsus 0.30 of tibia, second tarsal segment about 0.33 of metatarsus; third and fourth subequal, each a little shorter than the second, fifth 1.25 times the fourth; hind femur a little shorter than middle femur, tibia 1.40 times femur, tibial spur a little shorter than 0.50 of metatarsus, tarsus about 0.60 of tibia, metatarsus 0.20 of tibia, tarsal segments 2-5 subequal and each 0.40 of metatarsus.

Abdomen short, a little shorter than 0.50 of body, with fine reticulate microsculpture on the dorsum.

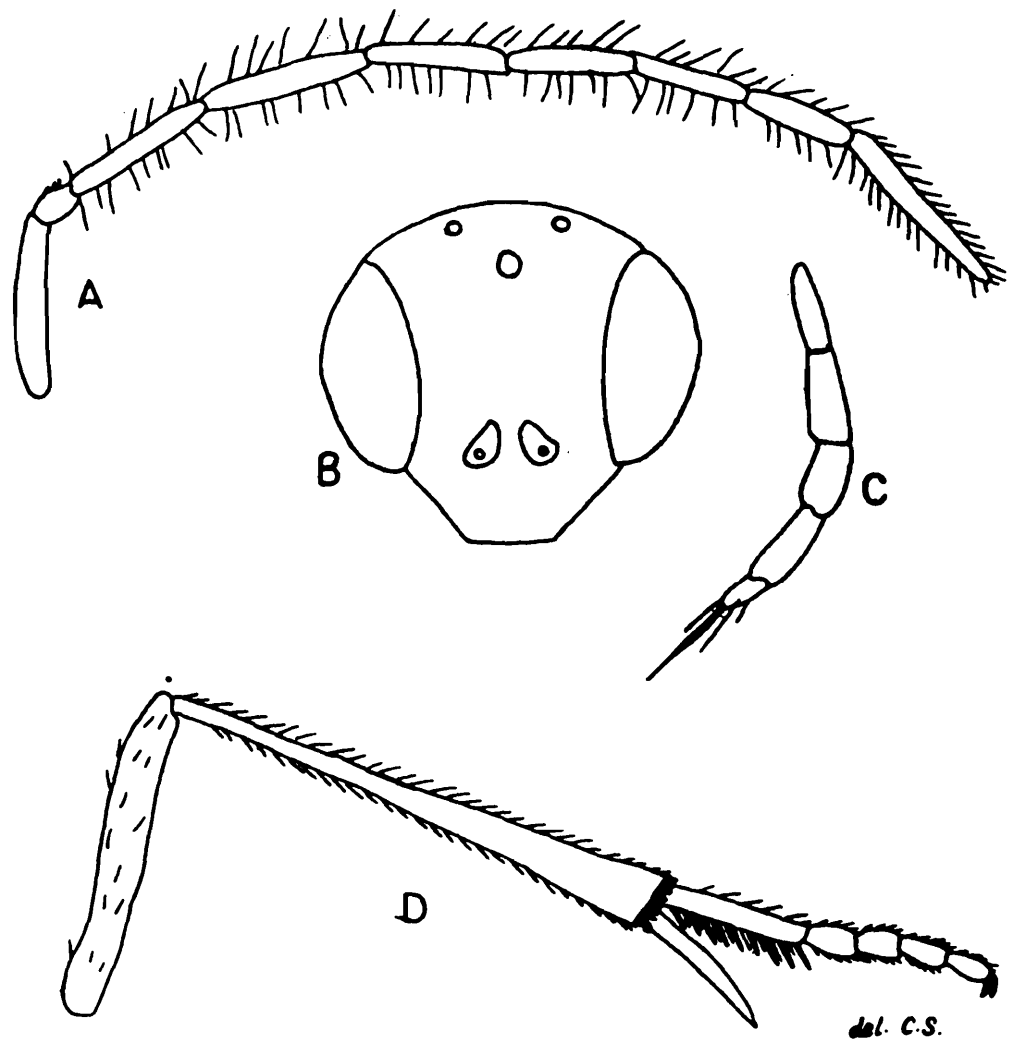

FIG. 185. *Callipteroma sexguttata* Motschulsky, male : A. Antenna; B. Head in front view; C. Maxillary palpi; D. Middle leg.

Female : Length 1.80 mm. Body blackish-brown, radicle, scape and pedicel brown, middle femur, tibia and tibial spur blackish-brown, tarsus yellowish-brown; hind leg blackish-brown; fore wing spotted and infuscated, with 5 hyaline spots in the middle and one apical which is narrower than in male; hind wing infuscated in the apical 0.50.

Head in front width to height 100 : 93; face with very minute reticulate microsculpture, interorbital space below a little over 0.50 of head width, ocellar triangle equilateral; ocellocular space subequal to interocellar space; front ocellar space 0.66 of ocellocular space; maxillary palpi with 5 segments, first and fourth segments subequal, second and third subequal and each about 1.50 times the first, fifth shortest, 0.50 of the fourth, otherwise as in male; antenna long, a little longer than body, segments 11 ; 1.1.6.3; scape long and slender, pedicel about 0.25 of scape, funicular segments elongate, uniformly thick, gradually becoming shorter apically; club little longer than preceding 2 segments combined.

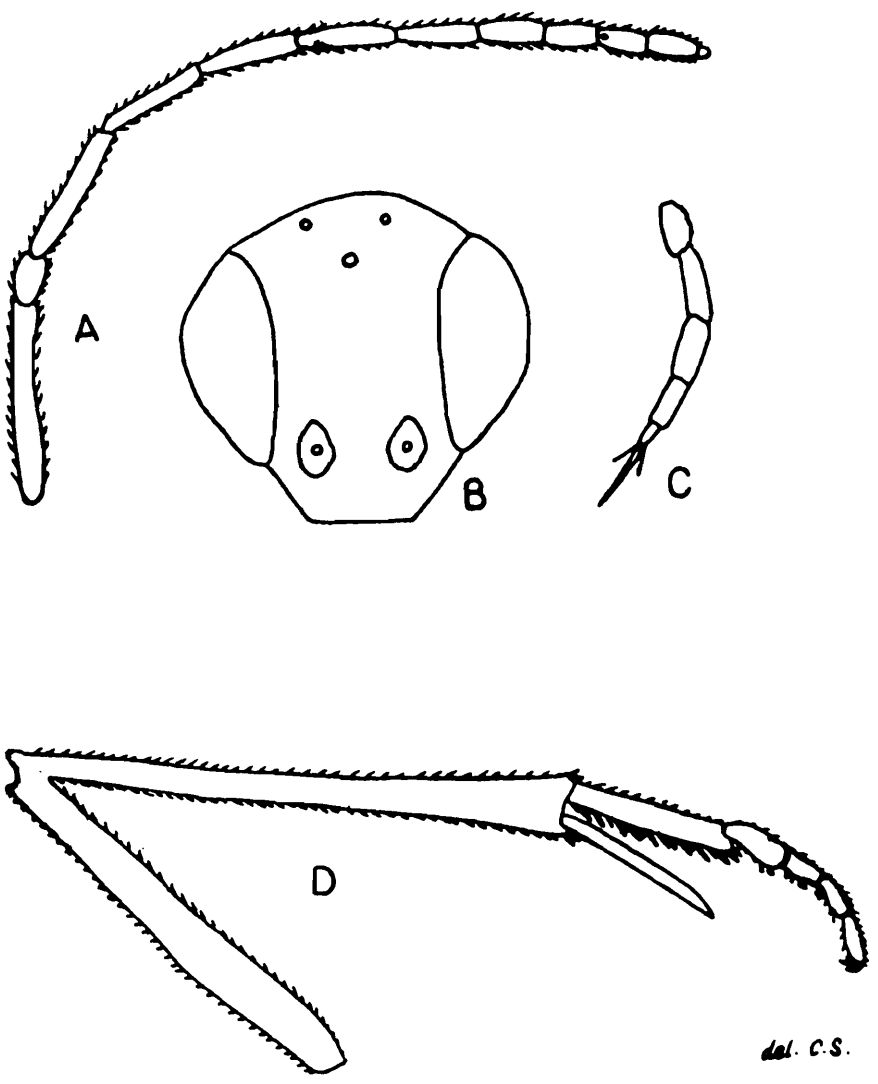

FIG. 186. *Callipteroma sexguttata* Motschulsky, female : A. Antenna; B. Head in front view; C. Maxillary palpi; D. Middle leg.

Mesonotum length 0.75 of width, scutellum as wide as long, 0.80 of mesonotum; axillae contiguous; mesonotum and scutellum with very fine reticulate microsculpture; fore wing length to width 100 : 31; veins *sm : m : pm : st* ratio 41 : 100 : 25 : 25; hind wing 0.60 of fore wing; middle femur long and slender, tibia about 1.25 times femur; tibial spur almost equal to metatarsus; metatarsus 0.30 of tibia, second tarsal segment about 0.40 of metatarsus; third a little over 0.50 of the second; fourth 1.25 times the third; fifth a little longer than the fourth; hind femur 0.85 of middle femur; tibia about 1.20 times femur; tibial spur 0.50 of metatarsus; metatarsus 0.25 of tibia; second tarsal segment 0.50 of metatarsus; segment 3-5 almost subequal, each a little shorter than the second.

Abdomen a little over 0.50 of body, with fine reticulate microsculpture on dorsum.

Type locality : Ceylon : Mt. Patannas.

Distribution : Ceylon; India : Madras, Palghat; Europe, Spain : Madrid; Caucasus.

Species Incertae Sedis

Callipteroma testacea Motschulsky

1863 *Callipteroma testacea,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 37.
1909 *Callipteroma testacea,* Schmiedeknecht, *Gen. Ins.,* 97 : 254.
1938 *Callipteroma testacea,* Mani, *Cat. Indian Ins.,* 23 : 95.

Length 1.66 mm. "Capite rotundato, convexo, opaco, oculis dilutis, antennis corpore dimidio longioribus, nudis, articulo lo brevi; mesonoto linea angulata antice impresso, utrinque segmento triangular formante, metanoto distincto, lato, postice arcutim excavato et profundo inciso; abdomine elongato-conico, medio supra inflexo, lateribus antice subalbidis; pedibus tenuis, elongatis, tibiis posticis apice spina longissima armatis."

Type locality : Ceylon : Patannas

3 Ectroma – Group of Genera

Neodusmetia Kerrich

1958 *Dusmetia* (partim) Burks, *Bull. Brooklyn ent. Soc.,* 52 (4) : 124.
1958 *Dusmetia* (partim) Richards, *Proc. Roy. ent. Soc. London,* (B) 27 (3-4) : 61.
1964 *Neodusmetia,* Kerrich, *Entomophaga,* 9 : 76.
1975 *Neodusmetia,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 28.
1979 *Neodusmatia,* Krombein *et al.,* Hymen. N. America, 1 : 920.

Eyes relatively small, about 0.25 of frontovertex width; clypeus very shortly emarginate; scrobes less than their own length from oral margin; female hypopygium prominent, boat-shaped; pronotum almost uniformly wide, margin straight; basal 0.75 of outer plates of ovipositor with thickened dorsal margin, apex of distal 0.25 sickle-shaped; mandible bidentate; funicle with 6 and club 3 segments; scape only slightly expanded in the middle, pedicel longer than the following segment; vein *m* punctiform; *st* subequal to *pm;* female apterous.

Type-species : Neodusmetia sangwani (Subba Rao)

Neodusmetia sangwani (Subba Rao)

(Fig. 187)

1957 *Dusmetia sangwani,* Subba Rao, *Proc. Indian Acad. Sci.,* (B) 46 : 385.
1957 *Dusmetia indica,* Burks, *Bull. Brooklyn ent. Soc.,* 52 (5) : 125.

1960 *Dusmetia sangwani,* Narayanan & Subba Rao, *Proc. nat. Inst. Sci. India.,* 26 (B) : 175.

1964 *Neodusmetia sangwani,* Kerrich, *Entomophaga,* 9 (1) : 76.

1975 *Neodusmetia sangwani,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 29.

1979 *Neodusmetia sangwani,* Krombein *et al.,* Hymen. N. America, 1 : 920.

Female : Length 1.30 mm. Body dark brown; scape and pedicel yellow; funicle dark brown; club white; eyes grey; legs yellow; abdomen dark brown; apterous; head lenticular, much wider than long; vertex wide, eyes small; ocellar triangle equilateral; interocellar space a little more than ocellocular space; vertex and frontovertex sparsely punctate; eye length 0.50 of head; scrobe very shallow; genal suture faint; antennae inserted close to the mouth, with 11 segments : 1.1.6.3; scape about 2.50 times longer than pedicel; pedicel about 0.33 of funicle; first funicular segment longer than thick, second segment thicker than long; following segments subequal; club about 2 times the pedicel, terminal segment rounded apically.

Thorax slightly narrower than head; pronotum wider than scutum; 2 times as long as wide; axillae narrow; wings very much reduced, with only vestiges of the fore wing; fore legs short, stout; middle tibial spur a little shorter than metatarsus.

Abdomen wider than thorax; longer than rest of body; hypopygium well developed, conspicuous; ovipositor slightly exserted.

Male : Length 1.00 mm. Body black; wings hyaline; fore legs brown; otherwise yellow; eyes black; ocelli brown; scape yellow; head broad, coarsely punctate; interocellar space 2 times the ocellocular space; antennae inserted close to the mouth; scape dilated; pedicel less than 0.50 of scape; first funicular segment longest; club short; vein *m* punctiform, about 0.80 of *sm, st* very short; abdomen shorter than the rest of body.

Type locality : Bangalore

Distribution : Bellary, Mysore

Host : Antonina sp. feeding on *Cynodon* grass

Ericydnus Walker

1837 *Ericydnus,* Walker, *Ent. Mag.,* 4 : 363.

1860 *Pezobius,* Förster, *Verh. nat. Ver. Preus. Rheinl.,* 17 : 129.

1904 *Ericydnus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 293, 296.

1909 *Ericydnus,* Schmiedeknecht, *Gen. Ins.,* 97 : 203.

1921 *Ericydnus,* Mercet, *Fauna Iberica,* 158.

1965 *Ericydnus,* Agarwal, *Acta Hymen.,* 2 (2) : 72.

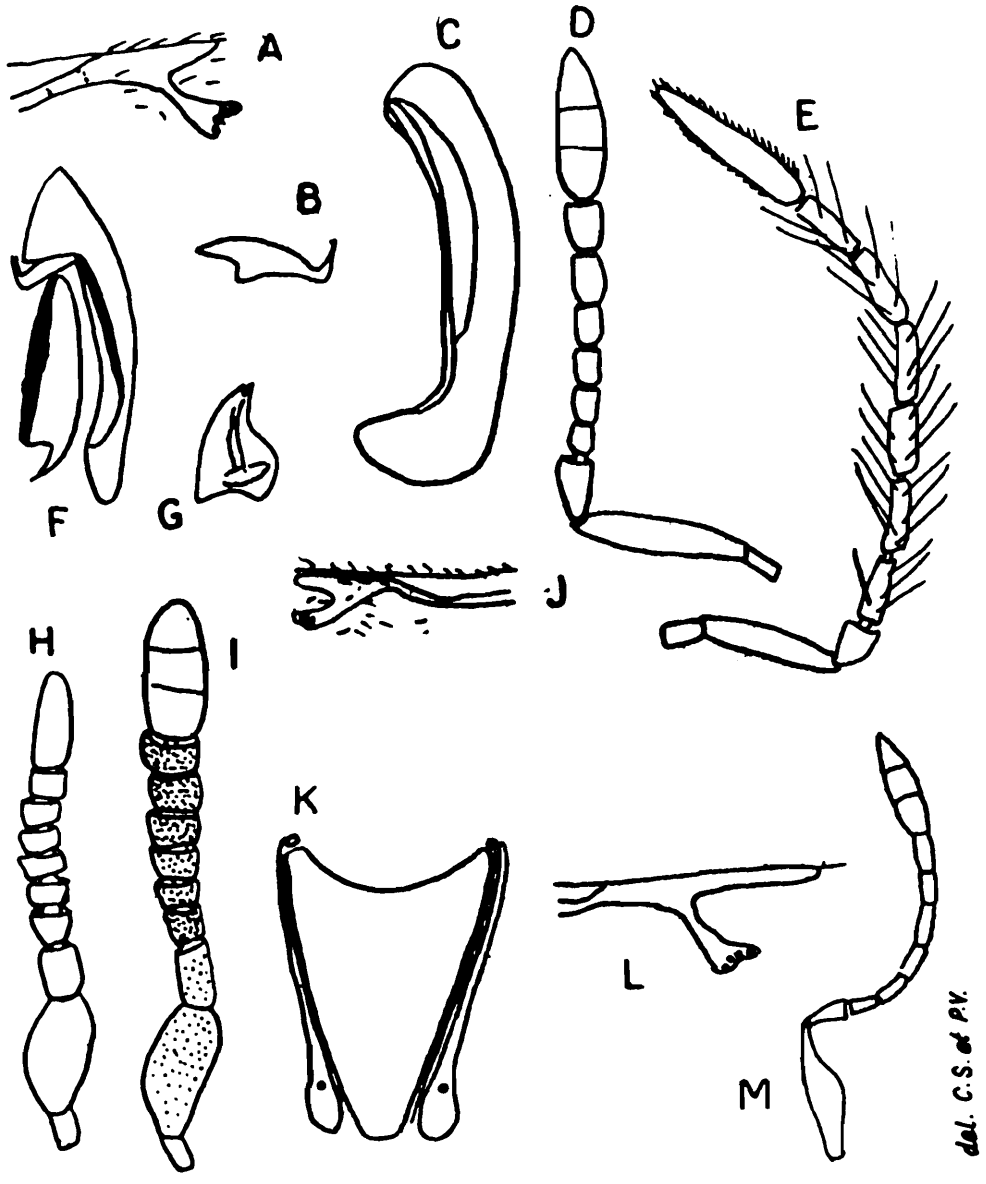

FIG. 187. *Doliphoceras tachikawai* Shafee, Alam & Agarwal : A. Stigmal venation, female; B. First valvifer, female; C. Second valvifer, female; D. Antenna, female; E. Antenna, male; F-K. *Neodusmetia sangwani* (Subba Rao) : F. Genitalia, female; G. Mandible, female; H. Antenna, male; I. Antenna, female; J. Stigmal venation, male; K. Apex of abdomen dorsal, female; L-M. *Ericydnus ceroplastis* Agarwal, female : L. Stigmal venation; M. Antenna. *(Modified from different authors).*

Head hemispherical, vertex margined, face finely shagreened with fine punctae, becoming striations at sides; scrobe deep; antennae inserted close to the mouth; scape long, cylindrical, funicular segments subequal; first funicular segment longer than pedicel, club obtuse, not compressed; lateral ocelli contiguous with eye; thorax flat, mesonotum shiny, finely shagreened; wing well developed or rudimentary; veins *st, m* and *pm* long; speculum obliquely linear;

legs long, slender, especially hind legs; abdomen short, triangular, first and last tergites long; ovipositor hidden.

Male : With cylindrical, slender funicular segments; subgenital plate with anterior margin concave, posterior margin convex with a small notch in middle; outer plates of ovipositor of uniform width, truncated at apex with dorsal margin thickened upto basal 0.66 and inflexed in apical 0.33; first valvifers subtriangular and third valvulae imperceptibly continuous with second valvifers.

Type-species : Ericydnus paludatus Walker

Ericydnus ceroplastis Agarwal

(Fig. 187)

1965 *Ericydnus ceroplastis,* Agarwal, *Acta Hymen.*, 2 (2) : 73.

Female : Length 1.41 mm. Head yellow, eyes and ocelli black; antennae whitish-yellow with black on lower margin of scape; thorax yellow; scutellum narrow at apex, with 2 pairs of long, black setae; fore wings hyaline, with dark brown veins and dark setae; fore, middle and hind legs uniformly light yellow; abdomen yellow.

Frontovertex wider than long, with large, close punctae in lines; head a little longer than wide; occiput rounded; ocelli in right-angled triangle; ocellocular space 1.50 times and ocelloccipital space 2 times ocellar diameter; eyes large, less than 2 times as long as wide; gena short, much shorter than eyes; antennae inserted close to mouth, mandibles bidentate, with small and pointed teeth; maxillary palpi with 4 segments; labial palpi with 3 segments; scape a little compressed, slightly laminated in basal 0.75 and narrow in apical 0.25, less than 4 times longer than thick; pedicel long, 2 times as long as thick, longer than the following segment; funicular segments longer than thick, segments 1-4 almost 2 times longer than thick; club 3 segmented, more than 3 times longer than thick, shorter than preceding 3 segments combined.

Pronotum short in the middle, front margin concave with a deep notch in the middle; hind margin convex; scutum somewhat reticulate; axillae broadly contiguous; scutellum slightly convex; metanotum narrow; propodeum of uniform width; fore wing less than 2.50 times longer than wide; costal cell narrow; vein *sm* very long, vein *m* 3 times longer than thick, slightly longer than vein *st; pm* much longer than vein *st,* marginal fringe short, spaced by a distance equal to 0.25 length of a hair; hind wings more than 4 times longer than wide; marginal fringe of moderate size 0.25 of wing width, spaced by a distance equal to 0.25 length of a hair; middle tibial spur much shorter than metatarsus, tip of tibiae with a row of 7 pegs; metatarsus and tarsal segments 2-4 with 11, 5, 5 and 3 pegs respectively; hind tibial spur double.

Abdomen subtriangular, a little shorter than thorax, ovipositor almost concealed; subgenital plate with anterior margin concave, posterior margin convex with a notch in the middle, mid longitudinal groove complete with 2 S-shaped submedian ridges; outer plates of ovipositor of uniform width, truncated at apex, dorsal margin thickened in basal 0.67 and inflexed in apical 0.33; first valvifers subtriangular with concave base and less prominent articular knobs; second valvifers with dorsal margin thickened throughout; third valvulae subconical, short and imperceptibly continuous with second valvifers.

Type locality : Aligarh

Host : Ceroplastes rubens Mask.

4. Tetracnemus – (= Tetracladia) Group of Genera

Diversicornia Mercet

1921 *Diversicornia,* Mercet, *Fauna Iberica,* 543

Male : Mandible tridentate; scape slightly compressed; pedicel moniliform; first funicular segment very short; funicular segments 2, 3 and 4 gradually becoming longer, with a lateral branch equally long; fifth segment much shorter than fourth, with one short branch; sixth segment unbranched, elongate, scape ovoid-lanceolate.

Thorax somewhat convex, parapsidal furrows more or less distinct posteriorly; axillae contiguous; scutellum triangular, flat; fore wing broad; vein *m* as long as thick, equal to *pm;* vein *st* short, equal to *m* and *pm* combined; speculum present; middle tibial spur short, subequal to metatarsus; hind tibial spur single.

Abdomen oval; first tergite large.

Female : Head from front subtriangular; antennae inserted close to mouth border, simple, filiform; scape cylindrical, but thickened basally; pedicel and funicular segments longer; club triarticulate, a little longer than funicle; vein *m* a little thicker than in male; abdomen wide, with lateral margin parallel; ovipositor exserted.

Type-species : Diversicornia pinicola Mercet

*Diversicornia panchagania** Mani & Saraswat

(Fig. 188)

1974 *Diversicornia panchgnia,* Mani & Saraswat, *Mem. School Ent.,* 3 : 81.

Male : Length 1.46 mm., range 1.20-1.80 mm. Body dark brown, with faint metallic-green reflections; head and antenna black;

* According to Hayat (1986) this is placed in *Charitopus* Först.

scape shiny black with metallic reflections, pedicel paler apically; abdomen yellow, tergites dark brown; legs brown, coxae dark brown, otherwise legs brown; wings hyaline, veins brown.

Head in front length to width 93 : 100; finely reticulately squamous; clypeus truncate; ocellocular space equal to 2 ocellar diameters; front ocellar space equal to ocellar diameter; eyes bare, eye length to head length 64 : 100; mandibles tridentate, third tooth very small; antennal segments 9 : 1.1.6.1; scape thicker basally and slender apically, slightly compressed in the middle, with fine microsculpture, about 3.30 times longer than thick; radicle very slightly less than 0.25 of scape; pedicel 1.27 times as long as thick, about 0.33 of scape; first funicular segment without branch, segments 2-5 with branches, first segment 1.43 times thicker than long, ratio of segments 1-5, 7 : 3 : 6 : 19 : 39; ratio of rami 1-4, 62 : 62 : 50 : 30, third ramus slightly less than 6 times longer than its segments; fourth ramus shortest and 1.50 times longer than its segment; club solid, stout, subequal to preceding funicular segment, about 6 times longer than thick; funicular rami and club with long whorls of curved setae.

Thorax finely reticulately squamous; scutellum distinctly longitudinally striolate; axillae contiguous but not fused; parapsidal furrows present; scutellum wide; epistoma carinate; fore wing large, marginal fringe short, speculum present, length to width 100 : 40; veins *sm, m* and *pm* with 9, 3 and one long setae, *m* short but distinct, thicker apically, about 4 times longer than thick; *st* long; veins *sm : m : pm : st* ratio 558 : 100 : 53 : 81; hind wing to fore wing length 75 : 100; fore coxae 1.75 times as long as thick, with fine microsculpture, with 3 long setae above; femur about 4 times as long as thick, about 1.52 times coxa, with fine, very faint microsculpture; tibia subequal to femur, about 6 times longer than thick; tarsus subequal to tibia or femur, metatarsus about 0.25 of tibia; tarsus with 13 stout spines below, second segment about 0.75 of metatarsus, third only very slightly shorter than second, fourth subequal to the third, fifth subequal to metatarsus; middle coxa about 1.25 times as long as thick, with fine microsculpture; femur 4 times as long as thick and about 2.30 times coxa, with very faint and fine microsculpture; tibia long, slender, thicker apically, 1.50 times femur and about 8.50 times longer than thick, spur stout and slightly curved, short, 0.66 of metatarsus and about 5 times longer than thick; tarsus slightly shorter than fore tarsus, tarsus to tibia about 7 : 13, slightly more than 0.50 of tibia, metatarsus about 0.25 of tarsus and about 0.14 of tibia, second segment only very slightly shorter than metatarsus, third 0.66 of metararsus and 0.75 of the second, fourth very slightly shorter than third, fifth subequal to the second; hind coxa about 1.10 times longer than thick, with fine microsculpture and with 5 setae above; femur 4 times as long as thick, about 2.50 times coxa, with very faint microsculpture; tibia long, slender, broader apically, tibia to femur 5 ; 4, slightly more than 8 times

longer than thick, spur 0.50 of metatarsus; tarsus subequal to middle femur, tarsus to tibia 3 : 4, metatarsus about 0.25 of tibia and 0.33 of tarsus, with 6-7 stout spines below, second segment slightly more than 0.50 of metatarsus, third almost 0.50 of metatarsus and only very slightly shorter than the second, fourth subequal to the third, fifth almost equal to second.

Abdomen shiny dorsally, with obscure microsculpture on dorsum; slightly less than 0.50 of body, subequal to thorax; aedeagus about 0.13 of abdomen; genitalia with 2 hooks.

Type locality : Panchgani

Distribution : Mahabaleshwar-Satara (Western Ghats)

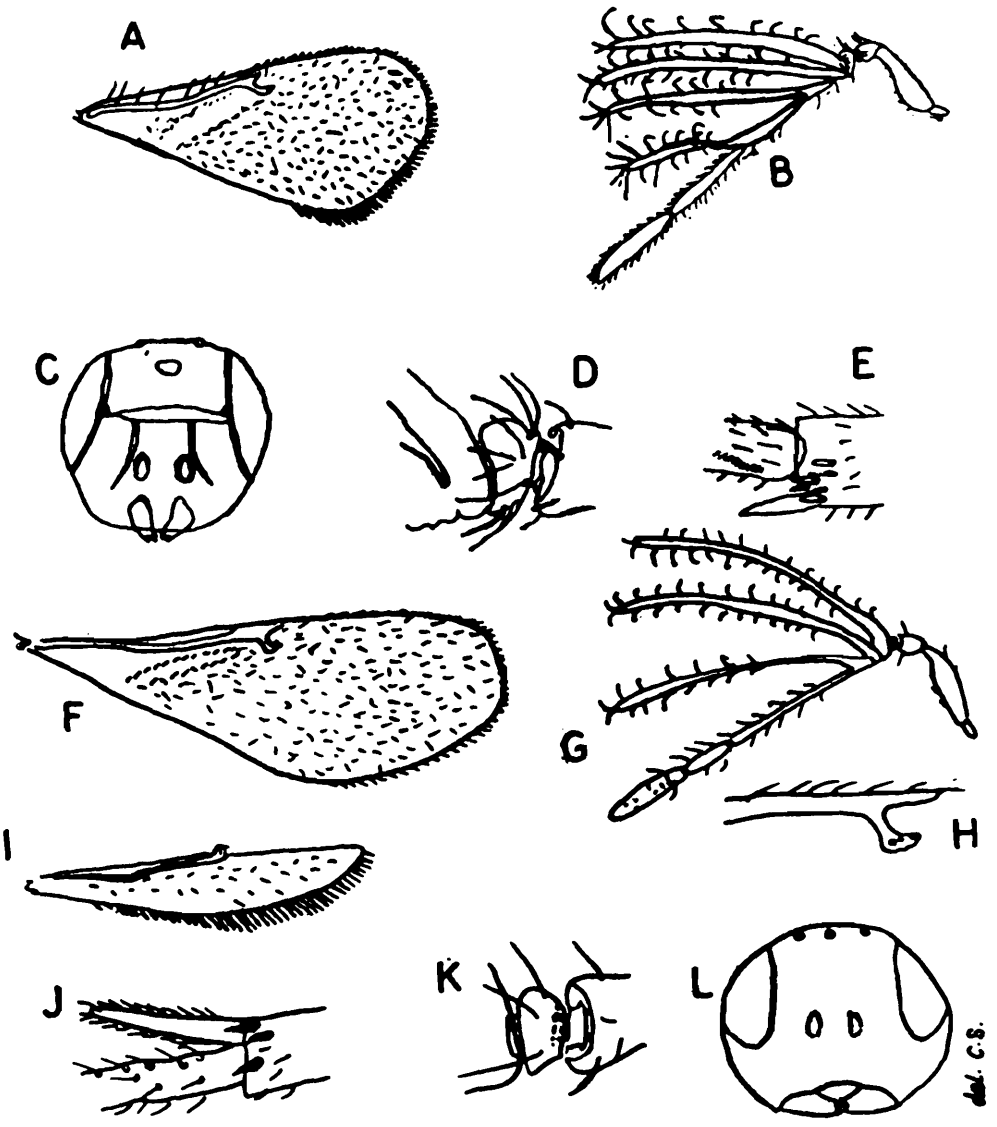

FIG. 188. *Diversicornia panchgania* Mani & Saraswat, male : A. Fore wing; B. Antenna; C. Head; D. First funicular segment; E. Middle tibial spur; F-L. *Tricnemus peninsularis* Mani & Saraswat, male; F. Fore wing; G. Antenna; H. Stigmal venation; I. Hind wing; J. Middle tibial spur; K. First funicular segment; L. Head in front view.

This spiecies very much resembles *D. pinicola* Mercet in the shape of antennae and some of the antennal characters, but differs in the larger body, general colour of body, length of fore and hind wing and abdomen; ocellocular space equal to 2 ocellar diameters; sixth funicular segment longest; veins *sm : pm : st* ratio 100 : 53 : 81; scutellum distinctly longitudinally striolate; abdomen subequal to thorax.

Tricnemus Mercet

1918 *Tricladia,* Mercet, *Bol. Soc. Esp. Hist. Nat.,* 18 : 430. (preoccupied in Enderlein, 1906).

1921 *Tricnemus,* Mercet, *Fauna Iberica,* 535.

Male : Head slightly convex; vertex almost horizontal; frons large; eyes oval, densely pubescent; mandible bidentate, outer tooth larger than the inner tooth, tip slightly acute; maxillary palpi with 3 and labial palpi with 2 segments; antennae ramose, inserted close to the mouth border; scape cylindrical; pedicel pyriform, longer than the first funicular segment; first 3 funicular segments very short, each with long lateral branch; segments 4, 5 and 6 normal; club entire; stout, more or less equal to the preceding segments combined.

Thorax entire; scutellum tirangular, convex, but looking horizontal from side; propodeum short; wings relatively large; marginal fringe short; speculum weakly developed; vein *sm* suddenly thickened in the apical 0.33; vein *m* more slender, a little shorter than *st;* vein *pm* minute; legs normal; middle tibial spur much shorter than metatarsus.

Abdomen elongate, but shorter than thorax.

Female : Head very large; vertex flat; eyes large; antennae inserted close to the mouth border; scape stout basally, cylindrical; pedicel longer than the first funicular segment; funicular segments longer than thick at apex; funicular segments one and 2 subequal, 3 a little shorter, 4-6 gradually becoming shorter; club entire stout, round apically and equal to the preceding 3 segments combined; thorax and wings as in male; abdomen as wide as thorax and slightly shorter; ovipositor more or less exserted.

Type-species : Tricnemus humilis (Mercet)

*Tricnemus peninsularis** Mani & Saraswat

(Fig. 188)

1974 *Tricnemus peninsularis,* Mani & Saraswat, *Mem. School Ent.,* 3 : 73.

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* According to Hayat, this species is placed in *Tetracnemus.*

Male Length 1.70 mm. Body dark metallic-green; abdomen brownish-black with faint metallic reflections, last abdominal tergite with dark blue reflections; antenna black, scape brownish black with metallic bluish-green reflections, pedicel and flagellum with a very faint greenish shine; legs yellowish-brown, coxae concolorous with thorax; basal 0.50 of fore coxa, distal 0.75 of fore femur, last tarsal segment of fore leg, 2-4 hind tarsal segments and middle femur brown; middle and hind coxae, hind femur, apical 0.50 of hind tibia, 4 and 5 middle tarsal and last tarsal segments of hind leg dark brown to black, otherwise legs brown; wings hyaline, veins dark brown.

Head in front length to width 78 : 100, finely reticulate; clypeus incised in front; ocellocular space about 2.40 times ocellar diameter, front ocellar space about 1.33 times ocellar diameter; eyes bare; mandibular teeth 2, with a very minute third tooth; antennal segments 9 excluding one very minute rudimentary annellus : 1.1.6.1; antenna to body about 3.4; scape slightly compressed in the middle, with fine reticulate microsculpture, 3.66 times longer than thick; radicle very slightly longer than thickness of scape and only very slightly more than 0.25 of scape; pedicel 1.50 times as long as thick, almost equal to radicle and about 0.33 of scape; first funicular segment without branch, segments 2-4 with branches, first segment 1.83 times thicker than long, ratios of segments 1-4, 6 : 4 : 6 : 9; third segment 0.66 of pedicel, first 2 funicular branches subequal, third branch a little shorter, length ratio of 3 branches 71 : 71 : 65; fifth funicular segment cylindrical, longest, 1.70 times longer than scape, sixth segment slightly thicker than the fifth, 0.37 of the fifth and almost 2 times pedicel; club solid, stout, 4.80 times longer than thick, equal to the preceding 1.75 funicular segments; funicular rami and club with long curved setae.

Thorax finely reticulate; axillae contiguous, not fused; parapsidal furrows absent; fore wing large, length to width 100 : 35, marginal fringe short, speculum present; veins *sm*, *m* and *pm* with 13, 4-5 and 3 long setae respectively, *m* 6 times longer than thick, veins *sm : m : pm : st :* ratio 330 : 100 : 40 : 27; hind wing with relatively longer marginal fringe, hind to fore wing length 75 : 100; fore coxa 2 times as long as thick, with fine microsculpture and with 4 long setae above; femur 5 times as long as thick, about 1.50 times coxa, with fine microsculpture, tibia to femur 9 : 10, 6 times longer than thick; tarsus 1.30 times longer than tibia, metatarsus about 0.25 of tarsus and about 0.33 ot tibia, with 10 stout spines below, second segment about 0.75 of metatarsus; third very slightly more than 0.75 of the second, fourth very slightly shorter than the third, fifth almost equal to metatarsus; middle coxa about 2.30 times as long as thick, with fine microsculpture; femur 8 times as long as thick, almost 2 coxa, with fine microsculpture; tibia long, slender, broader apically, 1.30 times femur, a little more than 10 times longer than thick; tibial spur very stout, spur to metatarsus 6 : 7 and about 6 times longer

than thick; tarsus almost equal to femur; tarsus to tibia 10 : 13, metatarsus 0.33 of tarsus and about 0.25 of tibia, with 8 stout spines below, second segment very slightly more than 0.50 of metatarsus, third about 0.75 of the second, fourth almost equal to the third, fifth subequal to the second; hind coxa almost a long as wide, with fine microsculpture, 2 times long, setae above several on the side; femur 3.70 times longer than thick and very slightly more than 2 times coxa, with fine microsculpture; tibia long, slender, broader apically, 1.40 times femur, almost 9 times longer than thick, spur very slightly more than 0.50 of metatarsus; tarsus equal to middle femur and very slightly longer than mid tarsus, tarsus to tibia 5 : 6, metatarsus 0.25 of tarsus and about 0.20 of tibia, with 7 stout spines below, second segement about 0.80 of metatarsus, third very slightly shorter than the second, fourth 0.66 of the second and very slightly more than 0.75 of the third, fifth subequal to the second.

Abdomen shiny, with fine microsculpture, very slightly less than 0.50 of the body; aedeagus 0.16 of the abdomen.

Type locality : South India

This species comes near *Tricnemus humilis* (Mercet) in body colour, shape of antennae, but differs in body size, first funicular segment without branch, segments 2-4 with branches and in the presence of one very minute and rudimentary annellus. The species may have to be referred to a new genus, because in the type of species of *Tricnemus* the first 3 funicular segments are ramose and in this species it is the second, third and fourth which are ramose.

Tetracnemus Westwood

1837 *Tetracnemus,* Westwood, *Ann. Mag. Nat. Hist.,* 1 : 258.
1882 *Tetracladia,* Howard, *Proc. US nat. Mus.,* 15 : 267.
1904 *Tetracnemus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 295, 297.
1904 *Tetracladia,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 295, 297.
1909 *Tetracnemus,* Schmiedeknecht, *Gen. Ins.,* 97 : 206.
1909 *Tetracladia,* Schmiedeknecht, *Gen. Ins.,* 97 : 208.
1915 *Paracalocerinus,* Girault, *Mem. Queensland Mus.,* 4 : 142.
1919 *Masia,* Mercet, *Bol. Soc. Espan. Hist. Nat.,* 19 (9-10) : 470.
1921 *Tetracnemus,* Mercet, *Fauna Iberica,* 541.
1923 *Anusiella,* Mercet, *Bol. Soc. Espan. Hist. Nat.,* 23 (6) : 287.
1938 *Tetracnemus,* Mani, *Cat. Indian Ins.,* 23 : 87.
1946 *Placoceras,* Erdös, *Frag. Faun. Hung.,* 9 : 1.
1955 *Tetracnemus,* Erdös, *Acta Zool. (Budapest),* 1 (3-4) : 221.
1960 *Tetracnemus,* Hoffer, *Acta Fauna Ent. Mus. Nat. Pragae,* 6 : 101.
1964 *Comperencyrtus,* De Santis, *Ann. Buenos Aires Com. Cien.,* 4 : 106.
1967 *Tetracnemus,* Kerrich, *Bull. Brit. Mus.,* 20 (5) : 149.
1979 *Tetracnemus,* Krombein *et al.,* Hymen. N. America, 1 : 919.

Space above clypeus carinate; frons narrow; axillae not contiguous, but widely separate; eyes round; antennae inserted deeply

below the lower orbital border; vein *pm* absent; antenna in male with 3 or 4 branches.

Westwood's original description of this genus and its single species were published in Magazine of natural History, 1837, Vol. I, new series pp. 257-259, under the title "a new genus of British parasitic Hymenoptera", and is here copied :

"Genus quasi intermedium inter *Encyrtum et Eulophum. Corpus* oblongum, minutum. *Caput* thorace paullo angustius. *Ocelli* distantes. *Antennae* capite cum thorace longiroes; 8 articulatae; articulo 1mo, elongato; 2do, parvo, obconico; 3tio, 4to, et 5to, minimis, singulo ramum elongatum supra ramum emittent; 7mo, paullo breviori; ultimo, magno, oblongo-ovato. *Thorax* ut in Encyrtis formatus, *scutello* magno subrotundato. *Alae* anticae nervo subcostali, cum costa spatio parvo conjuncto, et ad apicem ramum parvum clavatum et curvatum emiteente, *Pedessat* longi atque graciles, intermedii ut in Encyrto formati. *Tarsi* 5-articulati pulvillo magno. *Abdomen* parvum, ovatum, subdepressum; apice subacuminatum. Mas."

"Species unicu mihi adhuc cognita.

"*Tetracnemus diversicornis* Westwood."

"*Caput* nigro-aeneum, vertico tenuissime et transverse rugosum. Antennae nigrae, pilosae, *Thorax* aeneus, scabriculus; *tegulae* piceae. Abdomen nigricans. *Pedes* nigricantes, geniculis rufescentibus, tarsis piceis, calcaribus et articulo basali pedum intermediorum, luteis. Long crop ½ lin.; expans alr 1 lin. Habitat in quercetis apud sylvam Colombe, die 3 tio Julii, 1835, captus."

Type-species : Tetracnemus diversicornis Westwood

Tetracnemus indicus (Mani & Kaul)

1973 *Calocerinus indicus,* Mani & Kaul, *Mem. School Ent.,* 2 : 66.
1974 *Masia deccaensis,* Mani & Kaul, *Mem. School Ent.,* 3 : 65.
1976 *Tetracnemus indicus,* Subba Rao, *J. nat. Hist.,* 10 : 687.

Female : Length 1.50 mm. Body brownish-black, with metallic-blue reflections; scape brown, rest of antenna blackish-brown; fore leg brown; middle femur brown, tibia and tarsus pale yellow; hind femur and about apical 0.67 of tibia brownish-black, rest pale yellow; fore wing hyaline in the basal 0.33 and infuscated dusky-brown in the apical 0.66, with a subtriangular anterior and an obliquely oval hyaline spots, posterior linea clavae distinct, complete.

Head in front width to height 100 : 92, frons with fine minute, reticulate microsculpture; ocellocular space equal to ocellar diameter, front ocellar space 4 times ocellocular space, interocellar space 1.50 times front ocellar space; antenna inserted near the mouth border, short, with segments gradually becoming transverse and clavate

apically; scape long and slender, equal to all the funicular segments combined, pedicel a little less than 0.33 of scape; first funicular segment about 0.50 of pedicel; funicular segments 2-6 subequal, but gradually becoming more transverse apically; club stout, long and oval, 2.50 times as long as thick, a little more than all funicular segments combined.

Mesonotum with fine, reticulate microsculpture, about 1.60 times as wide as long, axillae contiguous; scutellum about as long as wide, with fine, reticulate microsculpture; fore wing length to width 100 : 31; veins *sm : m : pm : st* ratio 250 : 100 : 33 : 25; hind wing a little more than 0.50 of the fore wing; middle femur long and slender, 1.50 times fore femur; tibia about 1.25 times, tibial spur a little longer than metatarsus; metatarsus 0.27 of tibia, second tarsal segment 0.50 of metatarsus, third a little shorter than second, fourth 0.50 of the third, fifth a little longer than fourth; hind femur distinctly shorter than middle femur, tibia a little longer than femur; tibial spur about 0.50 of metatarsus; metatarsus about 0.33 of tibia; second tarsal segment a little over 0.50 of metatarsus; 3-5 subequal, each a little shorter than the second.

Abdomen a little shorter than 0.50 of body, ovipositor about 0.50 of abdomen; dorsum of abdomen with fine reticulate microsculpture.

Type locality Khandala

Exoristobia Ashmead

1904 *Exoristobia,* Ashmead, *J.N.Y. ent. Soc.,* 12 : 15.
1970 *Exoristobia,* Subba Rao, *Proc. R. ent. Soc. London,* (B) 39 (7-8) : 109.

Female : Body dark brown to black; head dark blue, with greenish-blue; interscrobal elevation metallic green; scrobe dark brown; thorax dark brown with metallic reflections in certain angles; tegulae brown; abdomen dark brown; legs brown; tibiae testaceous.

Head above reniform; scrobes deep; antennae inserted low down on face near mouth; toruli obovate; mandible with 2 acute teeth and a broad truncature; maxillary palpi with 4 and labial palpi with 3 segments; antennae moderately long, strongly clavate; funicular segments strongly transverse and progressively thicker; club large, equal to funicle; eyes distinctly hairy; axillae contiguous; ovipositor slightly exserted; wings hyaline, vein *m* long; vein *st* longer than *m,* curved upwards; vein *pm* at the most as long as *m,* shorter than *st.*

Male : Like female, but antennae slender; club one-segmented and shorter than funicle; funicular segments more or less moniliform.

Type-species : E. philippinensis Ashmead

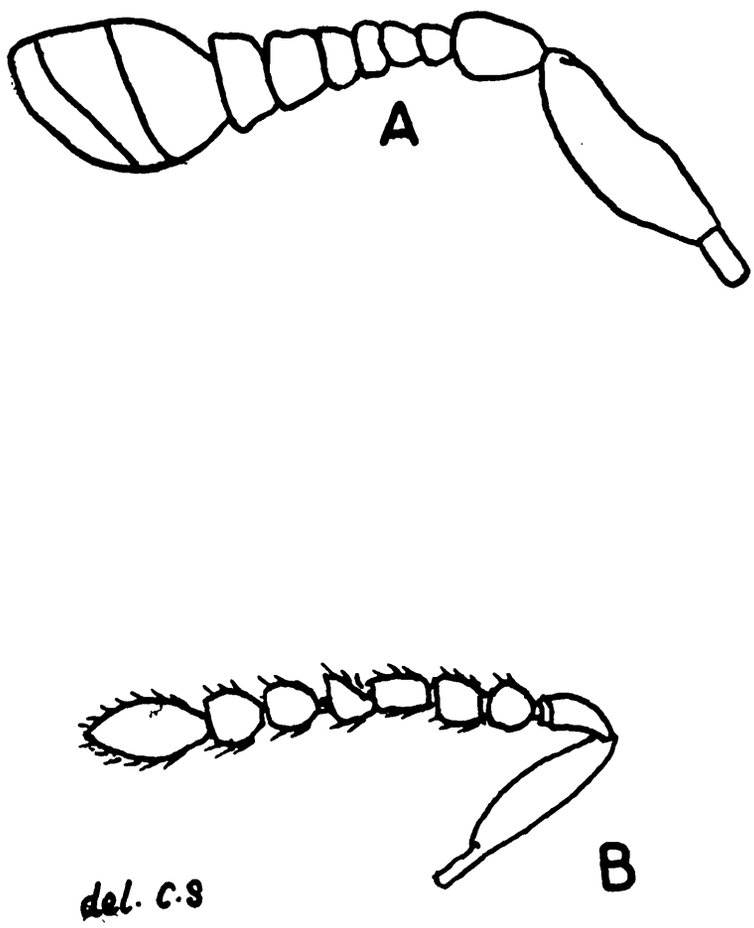

FIG. 189. *Exoristobia philippinensis* Ashmead : A. Antenna, female; B. Antenna, male.

Exoristobia philippinensis Ashmead

(Fig. 189)

1904 *Exoristobia philippinensis,* Ashmead, *J.N.Y. ent. Soc.,* 12 : 15.

1970 *Exoristobia philippinensis,* Subba Rao, *Proc. R. ent. Soc. London,* (B) 39 (7-8) : 113.

I have not seen this species and the description by Ashmead is not also available to me.

Type locality : Philippines

Distribution : Philippines, Burma, Indonesia, New Guinea, Papua, Malaysia, Ceylon.

Tribe Miraini

1904 *Mirini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 298.
1909 *Mirina,* Schmiedeknecht, *Gen. Ins.,* 97 : 208.
1953 *Bothriothoracini,* Hoffer, *Ochr. Prir.,* 8 : 83.
1955 *Bothriothoracini,* Hoffer, *Sb. narod. Mus. Praze,* 11 (1) : 19.
1973 *Bothriothoracini,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 27.

Mandibles tridentate; labrum mostly concealed; hypopygium not plough-share-shaped.

1. Mira — Group of Genera

Caenocercus Thomson

1856 *Echthroplexis,* Förster, *Hym. Stud.,* 2 :33 (Suppressed).
1875 *Caenocercus,* Thomson, *Hym. Skand.,* 4 : 145.
1898 *Echthroplectis,* Dalla Torre, *Cat. Hym.,* 5 : 367.
1904 *Echthroplexis,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 302, 308.
1909 *Caenocercus,* Schmiedeknecht, *Gen. Ins.,* 97 : 237.
1919 *Bothriencyrtus,* Timberlake, *Proc. Hawaii. ent. Soc.,* 4 (1) : 185, 212-214.
1963 *Caenocercus,* Erdös, *Beitr. Ent.,* 13 (3-4) : 286, 287.
1975 *Echthroplexis,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 69.
1979 *Caenocercus,* Krombein *et al.,* Hymen. N. America, 1 : 963.

Head globose; occiput actuely margined; eyes roundly oval; frons above with a row of coarse punctae; scrobes semi-circular, not reaching above the middle of face; antennae inserted close to the mouth; scape elongate, slightly flattened apically; funicular segments becoming clavate apically; club below excavate, curved.

Mesonotum wider than long, with scattered coarse punctae; scutellum almost smooth; propodeum behind with dense white hairs on either side; wings hyaline; vein *m* punctiform; *st* short, about 3 times as long as *m; pm* hardly developed; abdomen roundly ovate; ovipositor about 0.33 of abdomen.

Type-species : Caenocercus puncticalis Thomson

Caenocercus terebratus (Hayat, Alam & Agarwal)

1975 *Echthroplexis terebratus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 69.

Female : Length 1.00-1.02 mm. Head brown; antennae white except for the black scape and pedicel; thorax brown; fore wings hyaline; legs brown with tibiae yellow at tip; abdomen brownish; tarsal segments 1-4, fore, middle and hind metatarsi yellow; terminal segment of fore and middle and segments 2-5 of hind legs dusky.

Frontovertex apparently narrower than eye; ocellar triangle acute, lateral ocelli almost contiguous with orbit and removed from

occipital margin by more than one ocellar diameter; mandibles tridentate; scape slender, about 5.50 times longer than thick; pedicel longer than following 2 funicular segments combined; funicular segments short, first segment shorter than second; club with faint sutures, obliquely truncate from apex to almost base, shorter than preceding 4 segments combined.

Thorax reticulate, sparsely setose; axillae separated by a median carina; fore wings 2.25 times as long as wide; vein *sm* with 11 setae; vein *m* longer than thick, veins *st* and *pm* subequal; marginal fringe short; middle tibial spur shorter than metatarsus.

Abdomen wider than long, with tip somewhat rounded; subgenital plate reaching far beyond tip; ovipositor slightly shorter than abdomen, length of third valvulae : length of second valvifers, 0.47-0.56 : 0.29-0.36 mm.

Type locality : Ranipet

Host : Nipaecoccus vastator (Mask.)

Leiocyrtus Erdös & Novicky

1955 *Leiocyrtus,* Erdös & Novicky, *Beitr. Ent.,* 5 : 165-176.
1960 *Leiocyrtus,* Hoffer, *Acta Fauna ent. Mus. nat. Pragae,* 6 : 93-119.
1964 *Leiocyrtus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 120.
1964 *Leiocyrtus,* Erdös, *Fauna Hung.,* 73 : 372.
1975 *Leiocyrtus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 93.

Mandible tridentate, funicle with 6 segments, scape cylindrical; club with 3 segments; pronotum wide, almost of uniform width, a wide and shallow notch in the middle of front margin, hind margin convex; scutellum without hair tuft; subgenital plate with well developed anterolateral apodemes, middle of anterior margin cone-like; first valvifers triangular; outer plates of ovipositor narrow at base, broad at apex, basal 0.75 with thickened dorsal margin and third valvulae very long and narrow.

Type-species : Leiocyrtus clavatus Erdös & Novicky

Leiocyrtus aphidivorus Shafee, Alam & Agarwal

(Fig. 190)

1975 *Leiocyrtus aphidivorus,* Shafee, *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 93.

Female : Length 0.87 mm. Body black, with metallic-green reflections; radicle, basal 0.75 of scape; pedicel above dark brown; sixth funicular segment and club brown; distal 0.25 of scape, pedicel

below and first 5 funicular segments white, thorax dark, apex of scutellum and mesopleura with metallic-green reflections; fore wings hyaline; hind wings hyaline; fore coaxe and basal 0.75 of femur brown; torchanters, tip of femur, tibiae and tarsi white; middle coaxe, distal 0.50 of femur and basal 0.33 of tibiae brown; torchanters, basal 0.50 of femur, apical 0.66 of tibiae and tarsi white; hind coaxe, femora, tibiae except apex brown; trochanters, tip of tibiae and tarsi white; abdomen dark.

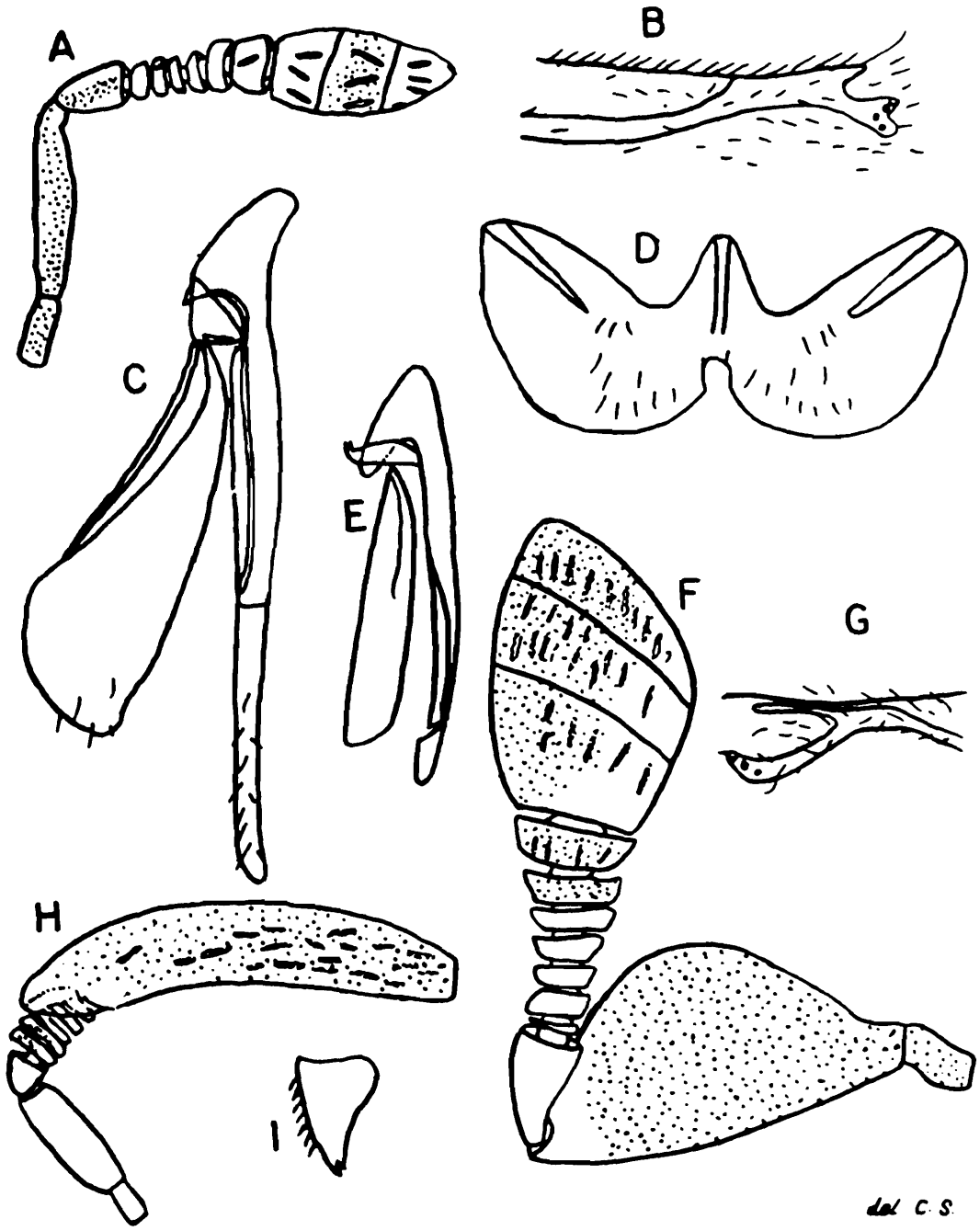

FIG. 190. A-D. *Leiocyrtus aphidivorus* Shafee, Alam & Agarwal, female : A. Antenna; B. Stigmal venation; C. External genitalia; D. Subgenital plate; E-I. *Aenasius advena* Compere : E. Genitalia female; F. Antenna, female; G. Stigmal venation, female; H. Antenna, male; I. Mandible, female. *(Modified from different authors).*

Frontovertex slightly longer than wide with scattered minute punctae; ocellar triangle obtuse-angled; ocellocullar space less than ocellar diameter, ocelloccipital space equal to ocellar diameter; gena shorter than eye; scrobes deep and inverted U-shaped; mandibles tridentate with teeth acute; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape 5 times longer than thick; pedicel equal to the following 4 funicular segments combined; funicular segments 1-6 transverse, more than 1.50 times thicker than long; club slightly more than 2 times longer than thick, distinctly longer than funicle.

Hind margin of pronotum with 7 pairs of setae; scutum 2 times wider than long; axillae triangular and contiguous; scutellum longer than scutum, rounded behind; fore wings slightly more than 2 times longer than wide; costal cell broad; vein *sm* with 8 long setae; vein *m* 3 times longer than thick; vein *pm* 0.33 of *m; vein st* slightly more than of 0.50 of *m,* longer than *pm* and dilated at apex; marginal fringe short; hind wings costal cell narrow, 3 frenal hooklets; middle tibial spur equal to metatarsus; 8 pegs at distal rim of tibiae.

Abdomen longer than thorax; ovipositor distincty exserted; third valvulae long and narrow.

Type locality : Guntur

Distribution : Udaipur; Guntur

Host Aphis sacchari on *Saccharum officinarum*

This species differs from *L. clavatus* Erdös & Novicky in scape cylindrical, 5 times longer than thick; club longer than funicle; vein *m* 3 times as long as thick; vein *pm* 0.33 of *m;* vein *st* slightly more than 0.50 of vein *m.*

Aenasius Walker

1846 *Aenasius,* Walker, *Ann. Mag. Nat Hist.,* 17 (3) : 180.
1904 *Aenasius,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 300.
1909 *Aenasius,* Compere, *Proc. Hawaii. ent. Soc.,* 9 (3) : 383-404.
1957 *Aenasius,* Bennett, *Canad. Ent.,* 89 : 569.
1963 *Aenasius,* De Santis, *Ann. Com. Invest. Cient. Buenos Aires,* 4 : 253.
1967 *Aenasius,* Kerrich, *Bull. Brit. Mus. Nat. Hist.* (Ent.), 20 (5) : 195.
1979 *Aenasius,* Krombein *et al.,* Hymen. N. America, 1 : 917.

Body short and compact; dark, with metallic reflections; head hemispherical, as wide as thorax, closely more or less umbilicately punctate; occiput deeply excavate, margin acute; eyes large, elongate oval, pubescent; mandibles bi or tridentate; maxillary palpi with 4 and labial palpi with 3 segments; scrobes short; antennae short, inserted close to mouth; scape below foliaceously enlarged; flagellum short; funicualr segments 6, thicker than long, becoming thicker apically club much thicker than and as long as funicle; thorax with

setigerous punctae; axillae separate; mesonotum sculptured like head; scutellum large, 2 times as long as mesonotum, with punctation much weaker; vein *m* short, hardly longer than thick; abdomen shortly ovate; shorter than head and thorax combined; ovipositor concealed; in male antennae stout, short, setaceous, densely shortly hairy, with funicular segments thicker than long; mesonotum smooth, almost without punctae.

Type-species : Aenasius hyettus Walker

Aenasius advena Compere

1937 *Aenasius advena,* Compere, *Proc. Hawaii. ent. Soc.,* 9 (3) : 388.
1937 *Aenasius ianthinus,* Compere, *Proc. Hawaii. ent. Soc.,* 9 (3) : 393.
1963 *Aenasius advena,* De Santis, *Ann. Comm. Invest. Cient. Buenos Aires,* 4 : 255.
1967 *Aenasius advena,* Compere, *Bull. Brit. Mus.,* (Ent.) 20 (5) : 207.
1975 *Aenasius advena,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 37.

Female : Length 2.00 mm. Body black, with metallic-green or purple reflections, tip of scape and first 4 funicular segments testaceous, but more or less with black; 4 funicular segments darker; wings irregularly infumate-brown, but hyaline apically; scrobe, scutum, scutellum and axillae reticulate; body with red setae, ocellar triangle equilateral; ocellocular space less than ocelloccipital space; antennal segmental ratio 3 : 2 : 6 : 80 : 10 : 20 : 20 : 20 : 24 : 36 : 108 : 68 : 36; mesonotum length to width 11 : 16.5; fore wing length to width ratio 1325 : 644; veins *sm : m : pm : st* ratio 30 : 3.5 : 6 : 7

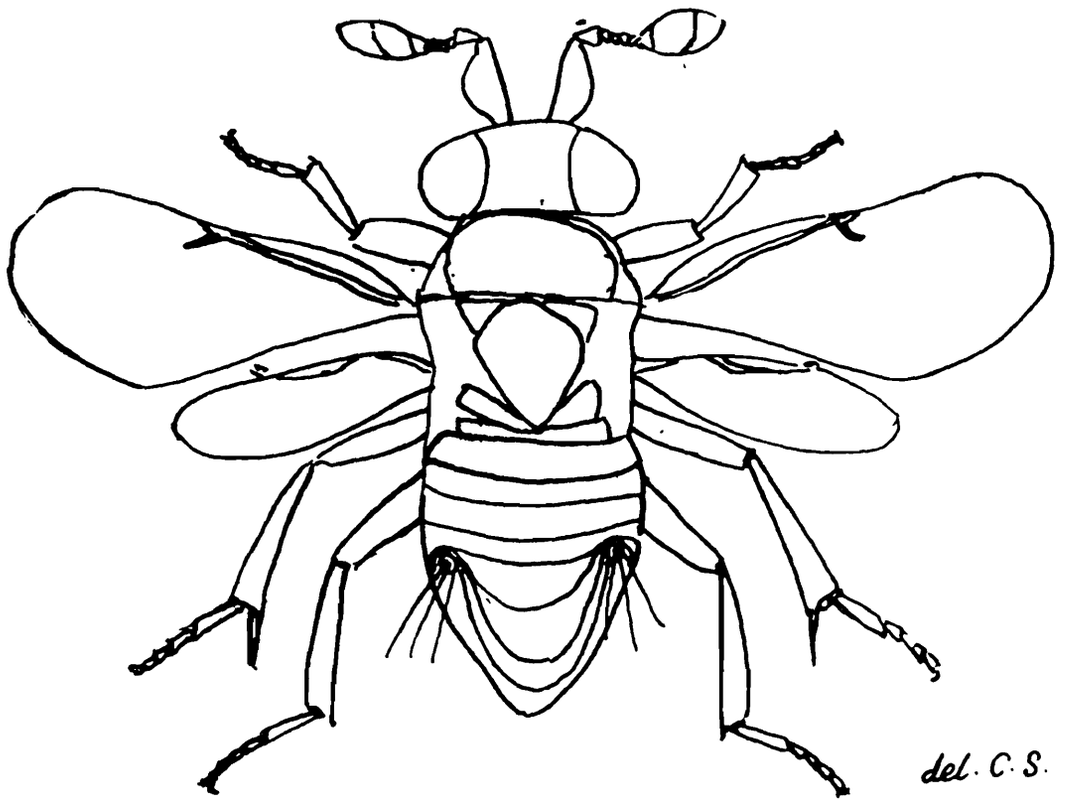

FIG. 191. *Aenasius advena* Compere, female.

Male : Face and gena with green-blue reflections; body otherwise black, ocellar triangle obtuse.

Type locality : Hawaii Islands

Distribution : Hawaii Islands; India : Quilon; Mexico; Brazil.

Host : Ferrisia virgata (Ckll.).

2. Aphycus — Group of Genera

Aphycus Mayr

1875 *Aphycus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 695.
1875 *Microterys* (partim) Thomson, *Skand. Hym.,* 4 : 155.
1904 *Aphycus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 302, 309.
1904 *Microterys,* Ashmead, *Mem. Carnegie Mus.,*1 (4) : 303, 310.
1909 *Aphycus,* Schmiedaknecht, *Gen. Ins.,* 97 : 203.
1916 *Pseudococcobius,* Timberlake, *Proc. US nat. Mus.,* 50 : 563.
1916 *Aphycus,* Timberlake, *Proc. US nat.Mus.,* 50 : 787.
1917 *Waterstonia,* Mercet, *Bol. Soc. esp. Hist. Nat.,* 17 : 268.
1921 *Aphycus,* Mercet, Fauna Iberica, 194.
1921 *Euaphycus,* Mercet, *Fauna Iberica,* 197.
1925 *Aphycus,* Mercet, *Eos,* 1 (1) : 14.
1928 *Aphycus,* Ishii, *Bul. Imp. Agric. Exp. Sta. Japan,* 3 (2) : 121.
1938 *Aphycus,* Mani, *Cat. Indian Ins.,* 23 : 89.
1947 *Aphycus,* Compere, *Pub. Ent. Calif. Univ.,* 8 (1) : 1-13.
1955 *Aphycus,* Hoffer, *Acta Soc. Ent. Czechosl.,* 51 : 82.
1957 *Aphycus,* Alam, *R. ent. Soc. London,* 109 (15) : 434.
1960 *Aphycus,* Compere and Annecke, *J. ent. Soc. South Africa,* 23 (2) : 377, 378.
1962 *Aphycus,* Trjpitzin, *Zool. Inst. Leningrad,* 30 : 281.
1963 *Aphycus,* De Santis, *Ann. Com. Invest. Cient. Prov. Buenos Aires,* 4 : 135.
1969 *Aphycus,* Graham, *Polsk. Pismo Ent.,* 39 (2) : 224.
1975 *Metaphycus,* Trjpitzin, *Stud. ent. forest Univ. Agric. Praha,* 2 (1) : 5-17.
1979 *Aphycus,* Krombein *et al.,* Hymen. N. America, 1 : 922.

Female : Head convex, frons elongate; occiput excavate, occipital border acute; eyes large, naked or amost naked; mandible tridentate apically; maxillary palpi with 2, 3 or 4 segments; ocellar triangle acute or equilateral; antennae short, inserted close to the mouth, variously coloured, with 11 segments : 1.1.6.3; scape fusiform, or more or less expanded; pedicel almost equal to 3 following segments combined; funicular segments short, club much thicker than funicle, rounded transversely or obliquely truncated at tip; thorax with white setae, parapsidal furrows traces.

Axillae contiguous; scutellum triangular, flat or nearly flat; fore wings hyaline, infumate or with black transverse bands; vein *m* punctiform, *pm* very short or absent; *st* generally long; speculum interrupted behind; hind wing triangular, narrow, hyaline with long fringe; middle tibial spur stout, equal to metatarsus; middle tarsus

stout; hind tibial spur single; abdomen short oval; ovipositor concealed or exserted; body dull, white, yellow, rose, brown or black.

Male generally darker; scape generally fusiform or only slightly truncate apically.

Type-species : Aphycus apicalis (Dalman)

KEY TO SUBGENERA

1. Maxillary palpi with 3-4 segments; labial palpi with 3 segments.	2
Maxillary palpi with 2-3 segments; labial palpi with 2 segments.	5
2. Maxillary palpi with 4 segments.	3
Maxillary palpi with 3 or 4 segments.	4
3. Antennae uniformly pale coloured; club obliquely truncate apically; scape cylindrical; parapsidal furrows absent; middle tibial spur shorter than metatarsus; ovipositor exserted.	Subgenus *Aphycus (Aphycus)*
Antennae fusiform; scape shorter than the first funicular segment; middle metatarsus shorter than the 2 following tarsal segments combined; abdomen transverse	Subgenus *Aphycus (Aphycoides)*
4. Antennae more or less setose, variously coloured; scape laminately expanded; club rounded or transversely truncate; trace of parapsidal furrows; middle tibial spur equal to metatarsus; ovipositor concealed	Subgenus *Aphycus (Metaphycus)*
5. Antennae variously coloured; scape fusiform; club ovoid; parapsidal furrows absent; middle tibial spur equal to metatarsus; ovipositor concealed	Subgenus *Aphycus (Euaphycus)*

KEY TO SPECIES APHYCUS (Aphycus)

1. Club wholly black or brown.	2
Club partly brown and partly yellowish white	*A. (A.) malabarensis* Mukerjee
2 .Pedicel shorter than following 2 funicular segments combined	*A.* (A.) *fusidorsum* Gahan
Pedicel longer than 2 funicular segments combined	3
3. Pedicel equal to 3 funicular segments combined ..	*A. (A.) litchensiae* Howard
Pedicel equal to 3.50 funicular segments combined	*A.. (A.) flavus* Howard

*Aphycus malabarensis Mukerjee

1975 *Aphycus malabarensis,* Mukerjee, *Mem. Sch. Ent.,* 4 : 46.

Female : Length 1.06 mm. Body brownish-yellow; clypeus and gena white; eyes and ocelli red; antenna yellowish-white; scape brownish-black in the middle; pedicel basally, first 4 funicular segments, first club segment and basal 0.33 of second club segment, brown; thorax with a narrow median longitudinal brown band; legs yellowish-white; wings hyaline; veins yellow; abdomen brownish-yellow.

Head in front length to width 84 : 100; ocellocular space equal to ocellar diameter, front ocellar space 0.75 of ocellar diameter, interocellar space 1.40 times ocellar diameter; radicle 0.28 of scape; scape 2.33 times longer than thick; pedicel 1.50 times longer than thick and 0.42 of scape; first funicular segment as long as thick; funicular segments 2-3 equal; fourth funicular segment equal to the first; fifth funicular segment 0.75 times as long as thick; sixth funicular segment equal to the fifth; club almost equal to funicle, 12.50 times as long as thick, segments equal.

Axillae contiguous; scutellum equal to mesonotum, fore wing length to width 100 45 ; veins *sm : m : pm : st* ratio 150 : 10 : 10 : 30 fore coxa as long as thick; femur 4 times longer than thick; tibia 4.25 times longer than thick, 0.85 of femur; tarsus subequal to tibia; middle coxa 1.25 times longer than thick; femur 5.60 times longer than thick; tibia 6.50 times longer than thick and subequal to femur, thickened apically, tibial spur 0.30 of tibia and equal to metatarsus; tarsus subequal to tibia, metatarsus 0.30 of tibia and 0.34 of tarsus, second segment 0.62 of metatarsus; third segment 0.60 of the second, fourth segment 0.66 of the third, fifth segment subequal to the second; hind coxa as long as thick; tibia subequal to femur and 6.50 times longer than thick; tarsus 0.84 of tibia.

Abdomen length to width 100 : 75.

Type locality : Kasargod : Kerala

This species differs from *A. fusidorsum* Gahan in its larger size, pedicel not shorter than the first 2 funicular segments combined; club much long than the preceding 3 segments combined and equal to the funicle, 4 funicular segments being darker and not pale yellowish as in *S. fusidorsum.*

Aphycus fusidorsum Gahan

1920 *Aphycus fusidorsum,* Gahan, *Proc. US nat.Mus.,* 56 (2299) : 521.
1938 *Aphycus fusidorsum,* Mani, *Cat. Indian Ins.,* 23 : 89.
1940 *Aphycus fusidorsum,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 15.

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* Hayat (1986) places this under *Metaphycus.*

Female : Frons and vertex brownish-yellow; pronotum white, with a brown dot at each lateral angle; remainder of thorax and abdomen dark fuscous, except that the margins of scutellum and a broad margin on abdomen pale yellowish; mesoscutum and scutellum clothed with fine white hairs; underside of head, thorax and abdomen pale brownish-yellow; tegulae pale; legs concolorous with underside of body; tibiae with 2 very obscure, scarcely noticeable, brown bands or spots and apical tarsal segment brown; scape with an oblique black spot in the middle; pedicel black basally; basal 0.50 of club blackish; rest of antennae pale yellow.

Front and vertex not quite 2 times as long as broad, granularly opaque; ocellar triangle acute angled; ocellocular space about 0.25 of ocellar diameter; scrobes deep, rather narrow; frons prominent; scape thickest about the middle, 0.33 as broad as long; pedicel shorter than first 2 funicular segments combined; first 4 funicular segments subequal, fully as long as thick or a little longer; segments 5-6 subequal, subquadrate, thicker than the fourth; club ovate; a little thicker than funicle, about equal to the preceding 3 funicular segments combined.

Wings closely uniformly ciliate, not broad; speculum interrupted posteriorly; mesoscutum and scutellum finely sculptured, opaque.

Type locality : Coimbatore

Host : Ceroplastes cajani

Aphycus litchensiae Howard

1895 *Aphycus litchensiae,* Howard, *Proc. US nat. Mus.,*18 : 640.
1909 *Aphycus litchensiae,* Schmiedeknecht, *Gen. Ins.,* 97 : 240.
1938 *Aphycus litchensiae,* Mani, *Cat. Indian Ins.,* 23 :90.

Female : Length 1.30 mm, wing expanse 3.00 mm. Body reddish-yellow; abdomen black; scape and pedicel black with white tips; funicular segments 1-4 black, fourth segment with white tip; segments 5-6 yellowish white; club black; scutellum black; tegulae black at tip; scutum with pair of narrow transverse curved black lines, one on each side, reaching almost to the middle; tibiae with 3 black bands; scape moderately enlarged below; pedicel about 2 times as long as thick; as long as the first 3 funicular segments combined; funicular segments become gradually thicker, fifth and sixth segments abruptly thicker than others; club flattened, obliquely truncate, as long as funicular segments 5-6 combined.

Type locality : Ceylon : Punduloya

Host : Litchensia koebeli

Aphycus flavus Howard

1881 *Aphycus flavus,* Howard, *Ann. Rep. US Dept. Agric.,* 1880 : 365.
1938 *Aphycus flavus,* Mani, *Cat. Indian Ins.,* 23 : 91.
1940 Aphycus flavus, Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 15.

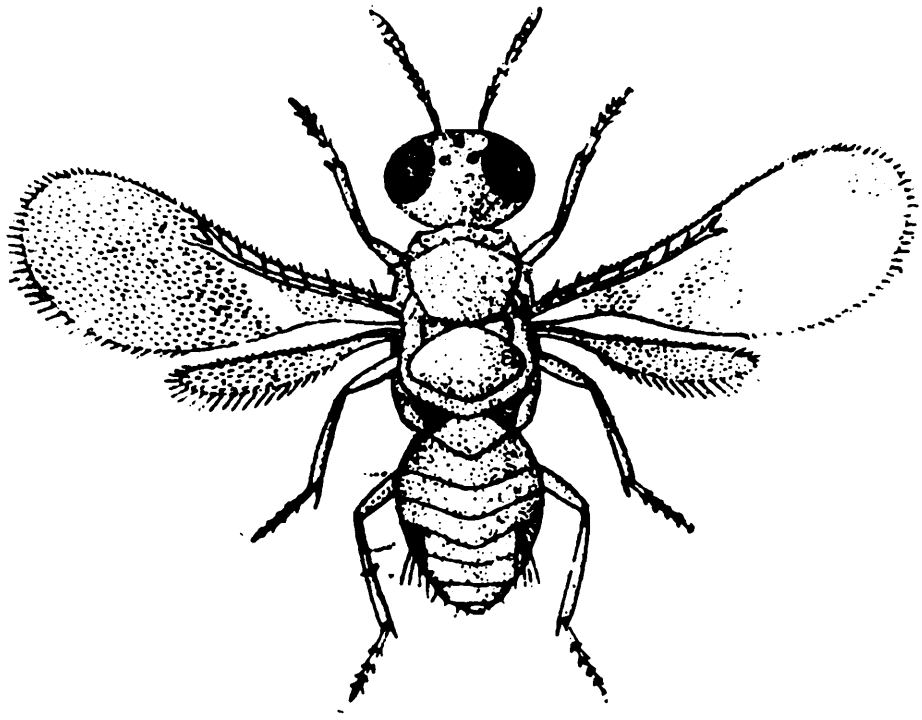

FIG. 192. *Aphycus flavus* Howard, female.

Female : Length 0.79 mm. Body lemon-yellow ; face pale, frontovertex and thorax orange; eyes black, ocelli red; antennae black to brown; a pair of dark spots on hind border of pronotum brown; propodeum and legs black.

Body generally reticulate, eyes bare; head length to width ratio 31 : 34; frontovertex 34 : 9.5; antennal segmental ratios 128 : 56 : 16 : 16 : 16 : 16 : 18 : 26 : 44 : 36 : 32; length and width of scutum 14 : 28; fore wing length to width 828 : 350; marginal fringe 20, veins *sm : m : pm : st* ratio 33 : 2 : 1 : 8; middle tibial spur length to metatarsus ratio 16.5 : 23, abdomen to thorax 34 : 43.

Male : Length 0.76 mm. Antennae uniformly black, propodeum and abdomen above brown; antennal segment ratio 100 : 44 : 16 : 14 : 16 : 16 : 20 : 28 : 88.

Type locality : America

Distribution : America; South India.

Hosts : Saissetia oleae and *Pulvinaria maxima.*

KEY TO SPECIES OF EUAPHYCUS

1. Scape dilated	2
Scape cylindrical	4
2. Club longer than funicle, scape 2.50 times longer than thick; pedicel longer than the following 3 funicular segments combined	*E.longiclavatus* Shafee, Alam & Agarwal
Club shorter than funicle	3

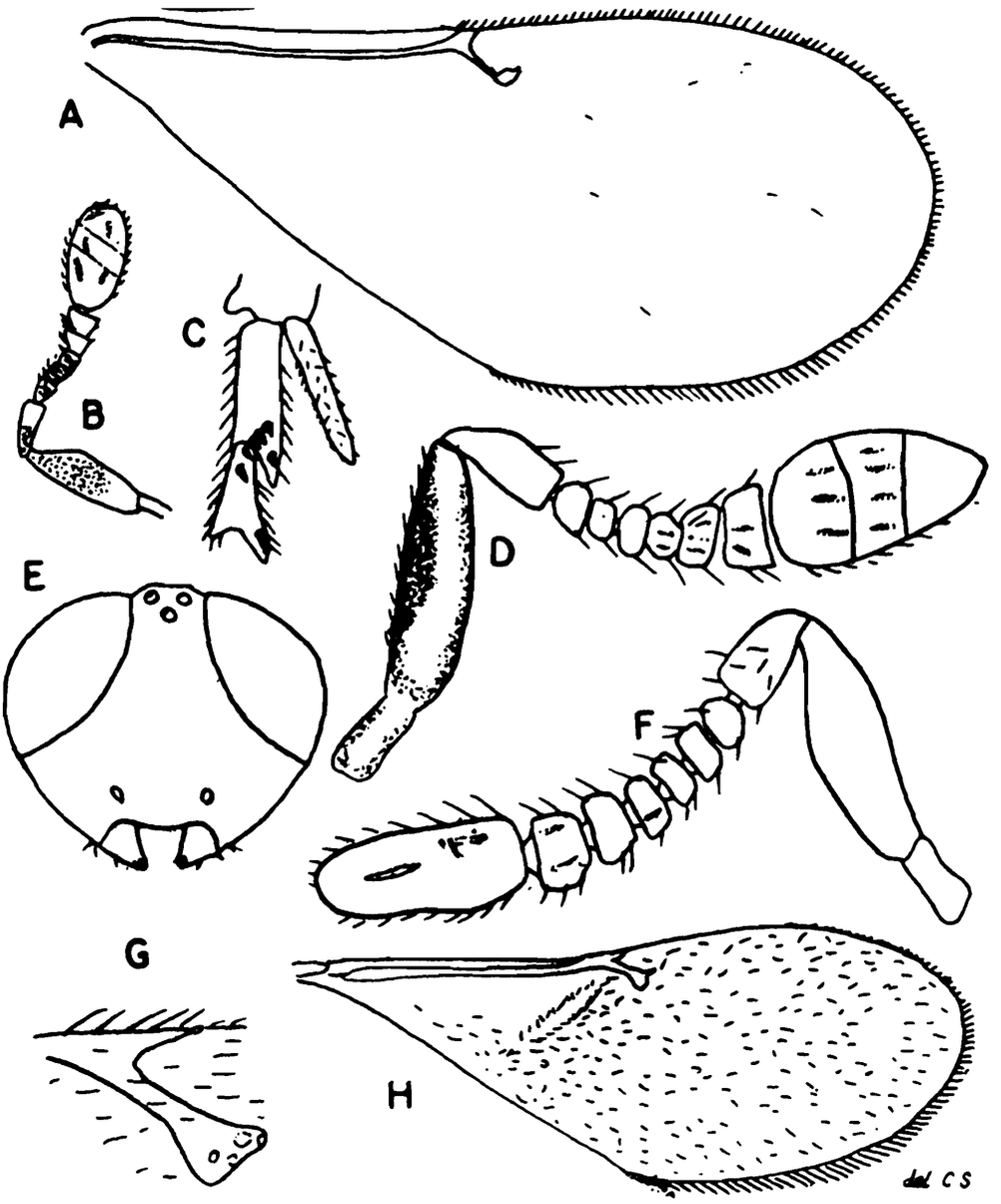

FIG. 193. *Aphycus flavus* Howard : A. Fore wing, female; D. Antenna, female; E. Antenna, male; *Aphycus malabarensis* Mukerjee, female : B. Antenna; C. Middle tibia and metatarsus; E. Head in front view; G. Stigmal venation; H. Fore wing.

3. Scape less than 2 times as long as wide; club 2 times longer than thick, slightly shorter than funicle; middle tibia with dark bands	*E. latiscapus* Shafee, Alam & Agarwal
Scape a little more than 2.50 times longer than wide; club a little more than 2 times longer than thick; shorter than preceding 5 segments combined	*E. cerococci* Shafee, Alam & Agarwal
4. Pedicel shorter than the following 2 segments combined; funicle uniformly brown	*E. crotolariae* Shafee, Alam & Agarwal
Pedicel longer than the following 3 funicular segments combined; some funicular segments white	5
5. Frontovertex a little longer than wide	*E. callunae* Alam
Frontovertex 2.50 times longer than wide	*E. variolosus* Alam

Euaphycus longiclavatus Shafee, Alam & Agarwal

1975 *Euaphycus longiclavatus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 88.

Female : Length 0.80 mm. Body yellow and dusky; head orange-yellow, occiput with a large brown patch above foramen; radicle, a large patch on scape, basal 0.66 of pedicel, funicular segments 1-4 and club brown; rest of antennae white; wings hyaline; legs white; abdomen dusky above, white for the rest.

Head 1.50 times as wide as long; frontovertex 0.33 of head width and about 1.50 times as long as wide; ocellar triangle acute-angled; ocellocular and ocelloccipital spaces equal to ocellar diameter; scape 2.50 times as long as thick; pedicel less than 2 times as long as wide, slightly shorter than following 4 funicular segments combined; funicular segments thicker than long, 1-3 subequal, 4-5 slightly thicker than third, sixth about 1.50 times thicker than long; club longer than funicle.

Marginal fringe slightly shorter than 0.12 of wing width; middle tibial spur subequal to metatarsus.

Abdomen slightly longer than thorax.

Type locality : Aligarh

Host : Chloropulvinaria on *Citrus*

Euaphycus latiscapus Shafee, Alam & Agarwal

1975 *Euaphycus latiscapus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 84.

Female : Length 1.20 mm. Body dark brown; head dorsum yellow; radicle, scape below, basal 0.66 of pedicel, funicular segments 1-3 and basal 2 club segments dark; scape above and at tip, distal 0.33 of pedicel, funicular segments 4-5 and distal club segment whitish-yellow; thorax brown; front margin of tegula, pleura and propodeum, white; legs yellowish-white, except for 2 infuscated bands on middle tibiae; abdomen with 7 transverse dark bands; rest white.

Frontovertex about 2.50 times longer than wide; ocellar triangle acute angled; lateral ocelli almost contiguous to eye; frons between eyes slightly narrower than distance between antennal sockets; scape expanded, slightly less than 2 times longer than thick; pedicel slightly less than 2 times longer than thick; about equal to the following 3 funicular segments combined; funicular segments 1-3 subequal, slightly thicker than long, 4-6 gradually thickened apically, sixth slightly less than 1.50 times thicker than long; club slightly more than 2 times longer than thick.

Posterior margin of pronotum with 9 pairs of long setae.

Abdomen a little longer than thorax.

Type locality Patna

Host : Pulvinaria maxima Green

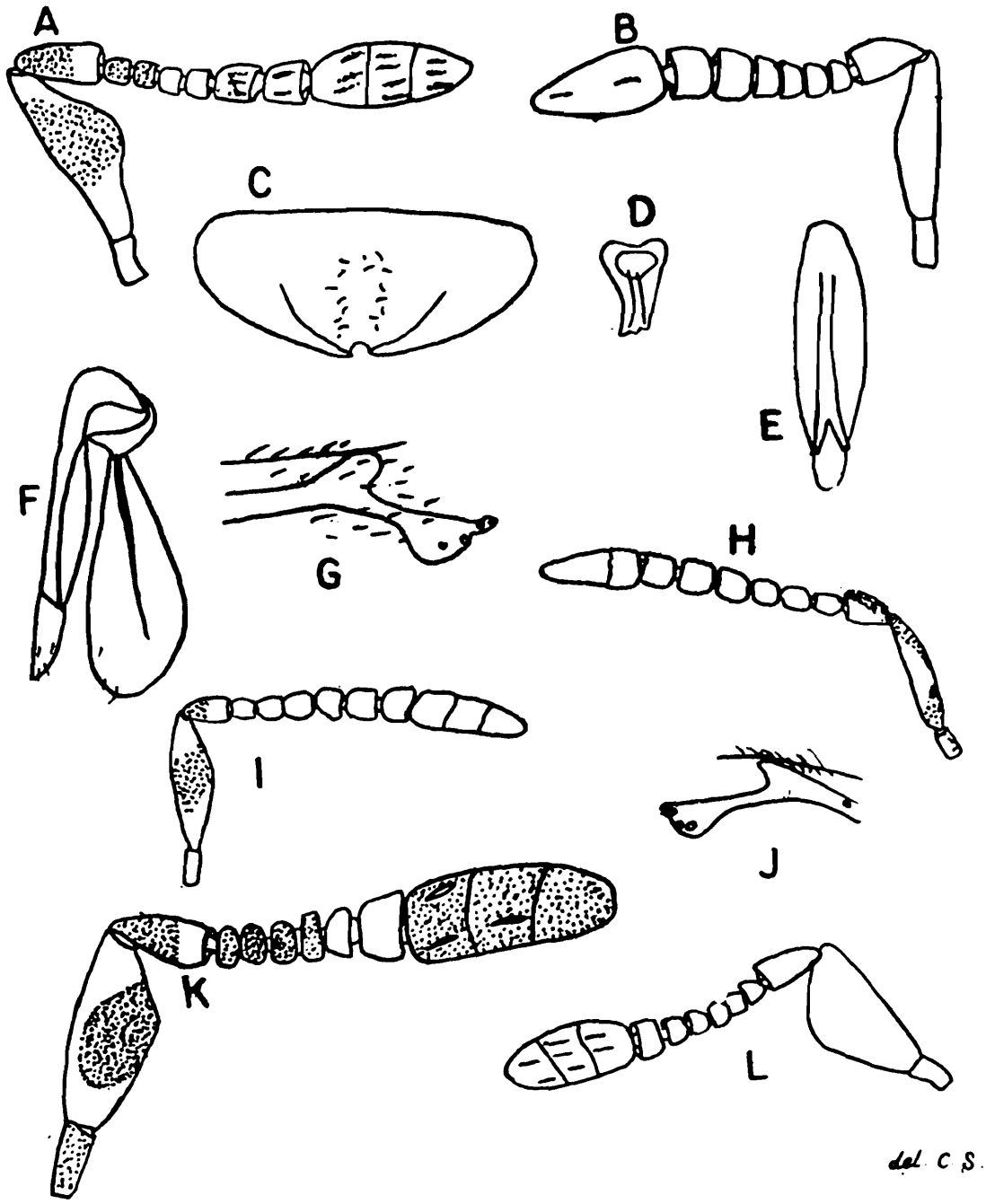

FIG. 194. A-G. *Euaphycus cerococci* Shafee, Alam & Agarwal : A. Antenna, female; B. Antenna, male; C. Subgenital plate, female; D. Mandible, female; E. Genitalia, male; F. Genitalia, female; G. Stigmal venation, female; H-J. *Euaphycus crotolariae* Shafee, Alam & Agarwal; H. Antenna, male; I. Antenna, female; J. Stigmal venation, female; K. *Euaphycus longiclavatus* Shafee, Alam & Agarwal, female; L. *Euaphycus latiscapus* Shafee, Alam & Agarwal, female : Antenna. *(Modified from* Shafee *et al.)*

Euaphycus cerococci Shafee, Alam & Agarwal

1975 *Euaphycus cerococci,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 83.

Female : Length 1.23 mm. Body yellowish-brown; head orange-yellow except the darker postocciput; scape in the middle, basal 0.66 of pedicel, funicular segments 1-4 and club dark brown; radicle, base and apex of scape, funicular segments 5-6 yellowish-brown; legs orange-yellow; abdomen yellowish-brown; thorax yellowish-brown; pronotum whitish, with a broad infuscated patch in the middle and a very small blackish patch in each posterior angle; fore wings hyaline; hind wings hyaline; antennae yellow.

Frontovertex 0.33 of head width, less than 2 times longer than wide; ocellar triangle equilateral; ocellocular and ocelloccipital spaces equal to ocellar diameter; eyes bare; gena slightly longer than eye; genal sutures distinct; frons between eyes distinctly wider than distance between antennal insertions; antennae inserted below lower orbital border; mandibles tridentate; teeth rounded at tip; both maxillary and labial palpi with 2 segments; scape slightly dilated in the middle, a little less than 3 times longer than thick; pedicel about 2 times as long as wide, slightly longer than following 3 funicular segments combined; funicular segments 2-4 about as long as thick, 5-6 gradually becoming larger; fifth slightly longer than thicker; club 3 segmented; 2.50 times longer than thick, slightly longer than preceding 4 funicular segments combined.

Pronotum with 13 pairs of long setae along posterior margin; axillae contiguous; scutellum longer than scutum, triangular behind; mesopostphragma long with truncated apex; fore wings slightly less than 2.50 times longer than wide; costal cell broad; vein *sm* with 13 setae; vein *m* punctiform;vein *pm* developed; vein *st* long, much dilated at tip; marginal fringe separated by 0.33 of the length; hind wings 4 times as long as wide; apex narrowly rounded; middle spur shorter than metatarsus.

Abdomen slightly longer than thorax; ovipositor concealed; knobs on the sides of central notch of hind margin of subgenital plate with laterally directed ridges.

Male : Differs in the following : Scape more or less cylindrical, slightly less than 4 times longer than thick; pedicel less than 2 times longer than thick; funicular segments 6 times thicker than long; club entire.

Type locality : Mysore : Bangalore

Host : Cerococcus sp. on *Hibiscus rosa-sinensis*

Euaphycus crotolariae Shafee, Alam & Agarwal

1975 *Euaphycus crotolariae,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 85.

Female : Length 1.05 mm. Body orange; head yellow; eyes black, occiput above foramen with a brown patch, otherwise yellow; scape with an oblique patch in the middle, basal 0.50 of pedicel dark brown; funicule brown; first and basal 0.50 of second club segments dark brown, rest of club yellowish-brown, rest of scape and pedicel white; thorax orange-yellow; pronotum with a brown patch in the middle and with 2 black dots on posterolaterally ocelli; sides of axillae, tegulae basally, metanotum and propodeum except sides (distad of spiracles) and mesopostphragma dusky; dorsum with white hairs, fore wings hyaline; legs white; tibiae with incomplete brown or dusky.

Head about 2 times as wide as long; frontovertex nearly 0.25 of head width, less than 2 times as long as wide; finely reticulate; ocellar triangle acute-angled; ocellocular space less than ocellar diameter, ocelloccipital space equal to ocellar diameter; gena shorter than eye; head in front as wide as long; eyes reaching to 0.66 of head depth; toruli removed from facial margin by a distance equal to 0.50 of length of a socket, their upper margins slightly below lower orbital border; scrobes deep, triangular; mandibles tridentate, teeth obtuse, both maxillary and labial palpi with 2 segments; scape slightly expanded beneath, 3.50 times as long as wide; pedicel less than 2 times as long as thick, shorter than following 2 funicular segments combined; funicular segments 1-5 slightly longer than thick, sixth slightly thicker than long; club not much thicker than preceding segment, slightly longer than preceding 3 funicular segments combined.

Hind margin of pronotum with 15 pairs of short setae; mesoscutum 1.50 times as wide as long; axillae confluent; scutellum as long as wide, pointed apically; mesopostphragma truncate apically; fore wings 2.50 times as long as wide; vein *m* punctiform vein *pm* short, spur-like; vein *st* longer than *m* and *pm* combined; speculum narrow, interrupted behind by 3 rows of discal setae, basal cut off portion circular; vein *sm* with 16 setae; marginal fringe short; hind wings over 5 times as long as wide; marginal fringe longer than 0.50 width of disc; middle tibial spur slightly shorter than metatarsus and longer than third valvulae; tip of middle tibia and tarsal segments 1-4 with 4,8,6,5 and 5 pegs respectively.

Abdomen equal to thorax; cercal plates situated at middle of abdomen; subgenital plate with front margin straight, hind margin with a shallow notch in the middle, notch followed by laterally directed ridges; third valvulae movably articulated with second valvifers; outer plates of ovipositor with thickened middle portion; ovipositor concealed.

Male : Length 0.91 mm. Like female except for antennae.

Type locality : Mangalagiri

Distribution : Srirangam; Shenkottah

Host : Ceroplastodes cajani

KEY TO SPECIES OF APHYCUS (METAPHYCUS)

1.	Club black	2
	Club yellow ..	*M. indicus* Shafee, Alam & Agarwal
2.	Middle tibial spur longer than metatarsus.	*M. maculatus* Agarwal
	Middle tibial spur equal to metatarsus.	*M. zebratus* Mercet

Metaphycus indicus Shafee, Alam & Agarwal

1975 *Metaphycus indicus,* Shafee *et al., Aligarh Muslim Univ.* (Zool.) 10 : 79.

Female : Body yellowish-brown to dark brown; head whitish-yellow except the dark postocciput; ocelli red; antennae yellow except for the dilated part of scape; basal 0.50 of pedicel, basal 3 funicular segments dark brown; middle of pronotum dark brown, sides white, with dark brown patches in posterior angles; mesothorax lemon-yellow; fore wings hyaline; legs whitish-yellow; abdomen yellow, smoky above; funicular segments uniformly dark brown in male.

Head in front wider than long; width of frontovertex 0.20 of head width, 2.50 times longer than wide; ocellar triangle acute-angled; lateral ocelli very close to eye; ocelloccipital space a little more than ocellar diameter; eyes bare; gena slightly shorter than eye; mandibles tridentate; both maxillary and labial palpi with 3 segments; scape dilated, 2 times as long as thick; pedicel 2 times longer than thick; equal to the following 3 funicular segments combined; funicular segments 1-4 subequal; fifth funicular segment longest, slightly thicker than long, sixth 1.50 times thicker than long; club distinctly less than 2 times longer than thick, slightly longer than the preceding 4 funicular segments combined.

Pronotal margin concave in front; hind margin convex, with 12 pairs of long setae; parapsidal furrows incomplete but distinct; scutellum subtriangular, acute apically; fore wings 2.50 times longer than wide; costal cell broad; vein *sm* long and with 16 setae; vein *m* punctiform; vein *pm* much shorter than *st*; vein *st* dilated at tip; marginal fringe short; hind wings 4.50 times longer than wide; costal cell very narrow; marginal fringe about 0.25 of wing width; tip of middle tibia with 3 short stout pegs; middle tibial spur shorter than metatarsus.

Abdomen slightly shorter than thorax; ovipositor concealed.

Male differs from female in the following : Pedicel 1.50 times longer than thick, slightly longer than following 2 funicular segments combined; club entire, slightly shorter than preceding 4 funicular segments combined.

M. indicus Shafee *et al.* is closely related to *M. stanleyi* Compere, but differs :

M. stanleyi Compere	*M. indicus* Shafee *et al.*
1. Gena black	1. Gena yellow
2. Legs with dark patches	2. Legs orange-yellow
3. Frontovertex 1.66 times as long as wide	3. Frontovertex 2.50 times as long as wide
4. Scape 2.50 times as long as wide	4. Scape 2 times as long as wide
5. Club slightly more than 2 times	5. Club distinctly less than 2 times as long as wide

Type locality : Nellore, Bucchireddipalyam

Host : Pulvinaria sp.

Metaphycus maculatus Agarwal

(Fig.195)

1965 *Metaphycus maculatus,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 89

1975 *Metaphycus maculatus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 80.

Female : Length 1.10 mm. Vertex yellow; face white, eyes and ocelli dark; postocciput and oral margins black; most of scape, basal 0.33 of pedicel and club black; scape basally, pedicel in apical 0.67 and funicular segments 5-6 white, segments 1-3 brown, fourth light brown; thorax yellow with some red or black markings on pronotum in the middle, front margin of scutum, axillae in front and sides, metanotum and propodeum on the sides and pro- and mesosterna above coxal bases; wings hyaline; fore legs white or very light yellow, femora below near apex with a black patch; tibiae with equidistant 2 black bands in the middle; abdomen smoky above upto cercal plates, yellow below with outer plates of ovipositor and second valvifers chocolate coloured, third valvulae white.

Head wider than long; frontovertex narrow, slightly less than 2 times as long as wide; ocellar triangle isosceles; lateral ocelli very close to eye, ocelloccipital space equal to ocellar diameter; eyes longer than wide; gena less than 0.50 of eye; scrobes shallow, carinate above; antennae inserted close to the oral margin; space between antennal sockets 1.50 times more than the width of frontovertex mandibles with 2 teeth and a truncature; maxillary palpi with 4 and labial palpi 3 segments; scape laminate, less than 3 times longer than thick, longer than club and funicular segments fifth and sixth combined; pedicel a little more than 2 times as long as thick, equal to the following 4 funicular segments combined; funicular segments thicker than long, except the fifth segment which is as long as thick; club 3-segmented, about 1.50 times longer than thick, equal to pedicel and first 2 funicular segments combined, rounded apically.

Pronotum wide, almost of uniform width, front margin deeply, acutely notched in the middle; hind margin convex; parapsidal furrows incomplete but distinct; axillae broadly contiguous; scutellum subtriangular, apex acute; propodeum narrow in the middle; fore wings less than 2.50 times longer than wide; costal cell broad; vein *m* very short, about 2 times as long as thick; vein *pm* wanting; vein *st very* short, about 4 times longer than vein *m*,

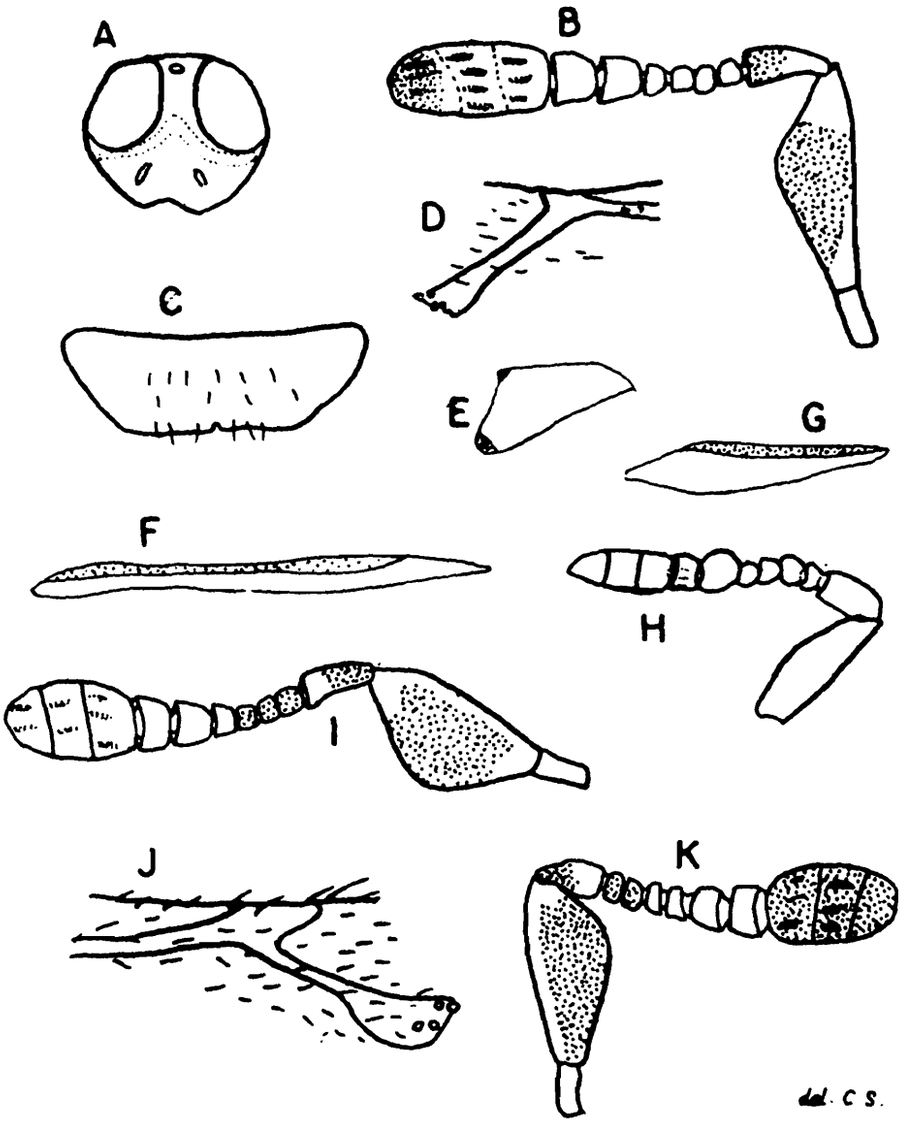

FIG. 195. A-H. *Metaphycus maculatus* Agarwal : A. Head in front, female; B. Antenna, female; C. Subgenital plate, female; D. Stigmal venation, female; E. First valvifer, female; F. Second and third valvifer, female; G. Outer plate of ovipositor, female; H. Antenna, male; I-J. *Metaphycus indicus* Shafee, Alam & Agarwal : I. Antenna, female; J. Fore wing venation, female; K. *Metaphycus zebratus* Mercet, female : Antenna. *(Modified from different authors).*

truncated apically; marginal fringe very short, about 2 times as long as thick; vein *pm* wanting; vein *st* very short, about 4 times longer than vein *m,* truncated apically; marginal fringe very short, spaced by a distance equal to 0.25 length of fringe; hind wings more than 4 times longer than wide; costal cell very narrow; marginal fringe short, about 0.25 of wing width, spaced by a distance equal to 0.25 of wing width, spaced by a distance equal to 0.25 length of a fringe; middle tibial spur longer than metatarsus, tip of tibiae with 4 short pegs; metatarsus, tarsal segments 2-4 with 18 (in two rows), 9, 9 and one pegs respectively; hind legs similar to fore legs; tibial spurs double.

Subgenital plate of uniform width, with a notch in middle on hind margin; knobs on either side of notch not followed by ridges; submarginal ridges on either side of notch present; outer plates of ovipositor narrow basally, broad and obliquely truncated apically, dorsal margin inflexed in basal 0.75 of length; first valvifers triangular with base straight and articular knobs prominent; second valvifers with entire dorsal margin inflexed; third valvulae short conical and movably articulated with second valvifers.

Male : Length 0.96 mm. Resembles female except for the following differences :

Scape with mid longitudinal white band; apical 0.67 of pedicel, funicular segments 5-6 white; scape above and below, basal 0.25 of pedicel, first 4 funicular segments and club brown; scape slightly broad in the middle; pedicel 1.50 times longer than wide, longer than the following 3 funicular segments combined; funicular segments thicker than long; club less than 2.50 times longer than wide.

Type locality : Aligarh

Distribution : Poona, Jaipur

Hosts : Pulvinaria sp., *Eriococcus largerstroemiae* Kuw. *Ceroplastes* sp. on *Citrus aurantifolia.*

Metaphycus zebratus Mercet

1916 *Aphycus zebratus,* Mercet, *Bol. R. Soc. Espan. Hist. nat. Madrid,* 16 : 138.

1921 *Aphycus (Metaphycus) zebratus,* Mercet, *Fauna Iberica,* 222.

1975 *Metaphycus zebratus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.)10 : 81.

Female : Length 1.40 mm. Vertex and frons ochraceous; face pale red; pronotum, scapula, tegula, pleura white; pronotum with a wide black band; tegula brown at tip; mesoscutum, axillae and scutellum red; propodeum and middle of abdomen brownish-black; sides of abdomen pale; antennae white and black; scape black, white basally and above; pedicel black in the middle and base, white apically; funicular segments 1-4 black, 5 and 6 white; club black; fore wing largely infumate the whole length; legs white; tibia with brown rings.

Vertex and frons finely shagreened; very slightly larger than wide; occipital border acutely margined; ocellar triangle acute; interocellar space less than the front ocellar space, subequal to ocelloccipital space; face strongly excavate; antennae separated from each other; scape expanded, equal to the following 3 segments combined; club equal to the preceding 4 funicular segments combined.

Thorax finely shagreened, densely closely with white hairs; parapsidal furrows more or less distinct; wings large, with speculum interrupted by 2 rows of setae and separated from the hind margin with 5-6 hairs; vein *m* punctiform; *st* long; *pm* very short, hardly visible; middle tibial spur equal to metatarsus, middle tarsus swollen, metatarsus equal to the following 3 segments combined with a row of stout spines in the apical 0.33 on the inner side.

Abdomen subtriangular, subequal to thorax, finely reticulately squamous; tergites 1-4 transverse; first tergite a little larger; ovipositor concealed.

Male : Length 1.28 mm. Like female but differs in the colour of head and thorax; head white, vertex and frons orange-yellow; mesoscutum, axillae and scutellum lemon-yellow; scape white with black band dorsally; pedicel yellow basally and brown apically; funicle, yellow below, brown above; club brown; scape much shorter than funicle, compressed the whole length; pedicel subequal to the 3 following segments combined; funicle and club densely hairy; club apparently triarticulate, subequal to the preceding segments combined; parapsidal furrows not very distinct; abdomen ovate, equal to thorax.

Type locality Madrid

Distribution : Europe; India : Phillaur, Mandi, Aligarh

Hosts *Nipaecoccus, Aonidiella orientalis, Ceroplastes cajani*

Proleuroceroides Shafee, Alam & Agarwal

1975 *Proleuroceroides,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 42.

Female : Head brown, slightly wider than long in facial view; gena as long as eye width; mandibles with 2 acute teeth; maxillary palpi with 4 and labial palpi with 3 segments respectively; antennae 11-segmented, inserted near the oral margin; scape more or less cylindrical; pedicel longer than basal 2 funicular segments combined; funicle 6-segmented, thicker than long; club 3-segmented, slightly shorter than funicle; thorax yellowish-brown; pronotum with front margin slightly concave in the middle, hind margin slightly convex; thorax with sparse setae, with reticulate sculpture; axillae contiguous; posterior margin of scutellum rounded; fore wings infuscate-brown;

costal cell broad; vein *m* punctiform, vein *st* longer than *pm;* middle tibial spur slightly longer than metatarsus; abdomen slightly longer than thorax; tenth tergite with anterior margin deeply concave in the middle, posterior margin more or less straight; paratergites absent; subgenital plate not reaching apex of abdomen; third valvulae imperceptible; outer plates of ovipositor with basal 0.66 with a dorsal marginal inflection.

Type-species : Proleuroceroides pyrillae Shafee *et al.*

This genus is related to *Proleurocerus* Ferrière, but differs in the smooth head, bidentate mandibles, triarticulate club and subgenital plate not reaching apex of abdomen.

Proleuroceroides pyrillae Shafee, Alam & Agarwal

(Fig. 196)

1975 *Proleuroceroides pyrillae,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 42.

Female : Length 1.08 mm. Body yellow to dark; head dark brown; ocelli white; radicle and scape except apex dark, apex of scape white; pedicel, funicular segments and club dark brown; thorax yellow, except front margin of mesoscutum infuscated; hind margin of scutum, axillae, pleurites and sternites whitish; fore wings brown, hind wings hyaline; fore and middle legs orange-yellow, except infuscated base of middle tibiae; abdomen dark brown.

Head in front a little wider than long; frontovertex 2.50 times longer than wide; ocellar triangle equilateral; ocellocular space equal to ocellar diameter; eyes bare; gena as long as eye; antennae inserted near oral margin; prominence between toruli wider than width of frons between eyes; mandibles with 2 acute teeth; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape elongate, about 4 times longer than thick; pedicel 1.50 times longer than thick, as long as the following 3 funicular segments combined; funicular segments 1-6 thicker than long, first segment slightly, sixth segment 1.50 times thicker than long; club slightly longer than preceding 5 funicular segments combined.

Pronotum with front margin slightly concave in the middle, hind margin convex; scutum slightly more than 1.50 times wider than long and sparsely setose; axillae bare; scutellum slightly longer than wide, longer than scutum, sparsely with somewhat long setae; scutum, axillae and scutellum deeply reticulate; fore wings slightly less than 2.50 times longer than wide; costal cell broad; vein *sm* with 8 long setae; vein *m* punctiform; vein *st* longer than *m-pm;* marginal fringe short, spaced by a distance equal to 0.33 of the hair; hind wings slightly more than 4 times longer than wide length of marginal fringe equal to 0.25 of wing width and spaced by distance equal to 0.25

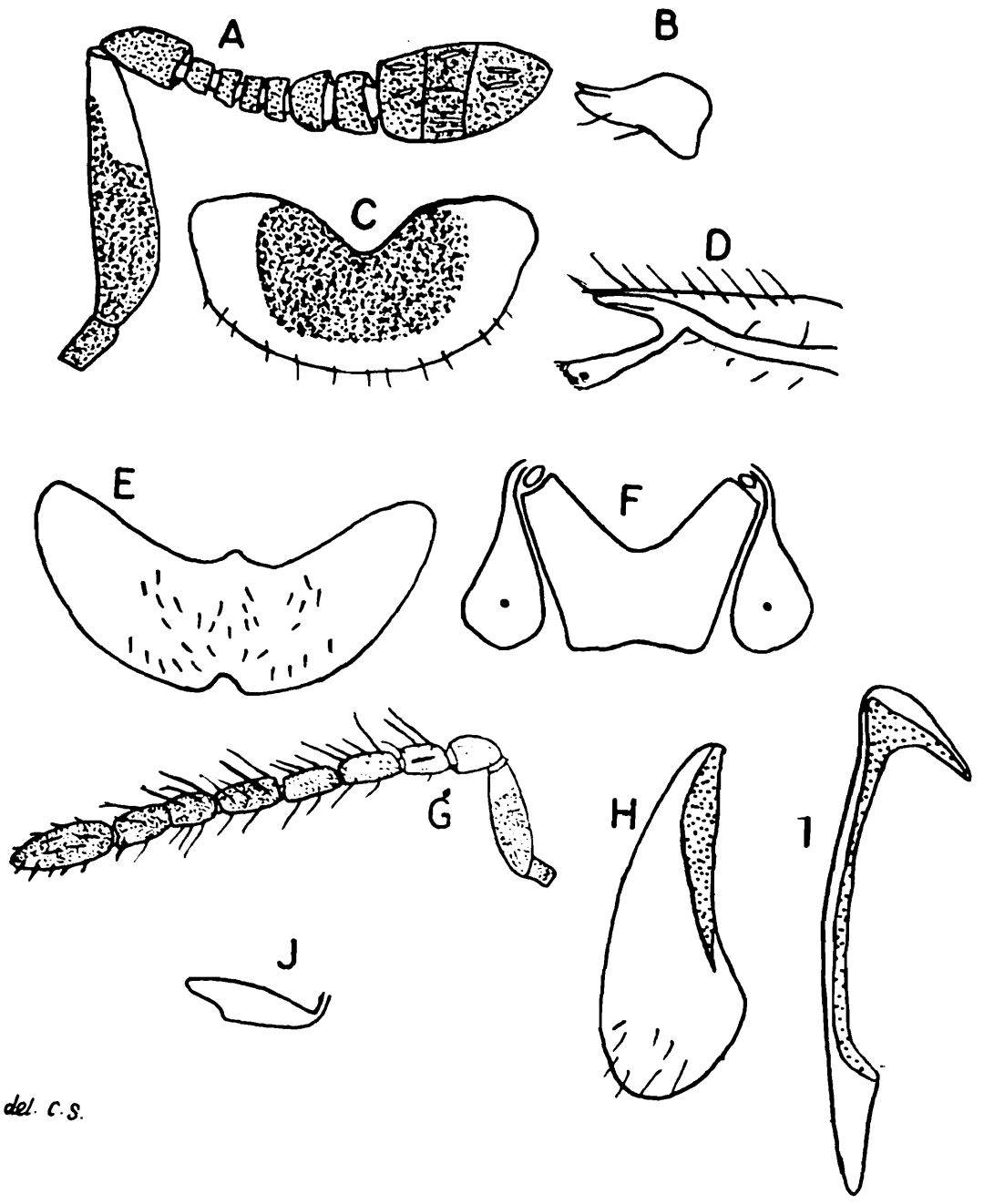

FIG. 196. *Proleuroceroides pyrillae* Shafee, Alam & Agarwal : A. Antenna, female; B. Mandible, female; C. Pronotum, female; D. Stigmal venation, female; E. Subgenital plate, female; F. Abdomen, female; G. Antenna, male; H. Ovipositor outer plate; I. Second valvifer, female; J. First valvifer, female. *(Modified from* Shafee *et al.)*.

of hair; middle tibial spur slightly longer than metatarsus; tip of tibia with 7 pegs.

Abdomen longer than thorax; front margin of tenth tergum concave in the middle, hind margin more or less straight; paratergites absent; subgenital plate not reaching apex of abdomen; anterior margin of subgenital plate concave in the middle; posterior margin semi-circular, with a notch in the middle; third valvulae imperceptible; basal 0.66 of outer plates of ovipositor with dorsal marginal inflection; ovipositor slightly exserted.

Male : Length 1.01 mm. Differs from female as follows : Pedicel equal to first funicular segment; funicle 6-segmented, segments longer than thick, with long hairs; club unsegmented, equal to the preceding 2 funicular segments combined.

Type locality : Udaipur

Host : Pyrilla spp. of sugarcane

Proleurocerus Ferrière

1935 *Proleurocerus,* Ferrière, *Bull. ent. Res. London,* 26 : 402
1938 *Proleurocerus,* Mani, *Cat. Indian Ins.,* 23 : 150.
1955 *Arachnosinis,* Compere & Zinna, *Boll. Lab. Ent. agrar. Portici,* 14 : 112.
1972 *Proleurocerus,* Hayat, *Acta ent. bohemoslov.,* 69 : 212.

Pronotum broad, uniformly wide, front margin incised, hind margin convex, tergites clavate laterally; tergite 10 truncated behind; subgenital plate with 3 lobes in the middle behind; anterolateral apodemes distinct; first valvifer semi-circular; third valvulae short; outer plates of ovipositor uniformly wide, rounded apically; fore wings infuscate; mandibles with 3 teeth; vein *pm* shorter than *st;* scape cylinderical; funicle with 6 segmnets.

Frons a little prominent, frontovertex more than 2 times as long as broad, shallowly umbilicately punctate; face inflexed, not margined; antennae inserted near mouth; scape large, broadly foliaceous, oval; flagellum very short, pedicel not longer than thick; club solid, thicker and longer than funicle; middle one a little longer and more pointed than others; axillae contiguous; vein *m* punctiform, distant from the margin of the wing, only the end of the short vein *pm* reaching anterior margin; vein *st* narrow, longer than *pm;* abdomen equal to thorax, hypopygium protruding beyond the tip of the last tergite.

Type-species : P. fulgoridis Ferrière

This genus is related to *Leurocerus* Crawford and *Leuroceroides* Girault, which have broad scape, transverse funicular segments and solid club. In *Leurocerus* antennae more flattened and foliaceous, like *Cerapterocerus* and venation similar, but nearer margin *Leuroceroides* is quite different; disitinct vein *m* being longer than *st.* This genus is characterised by the form of the antennae, vein *m* not reaching the margin of wing, form of the mandibles and prominent hypopygium.

Proleurocerus fulgoridis Ferrière

1935 *Proleurocerus fulgoridis,* Ferrière, *Bull. ent. Res.,* 26 : 403.
1975 *Proleurocerus fulgoridis,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 39.

Female : Length 1. 25-1.62 mm. Body dark brown, with metallic-green reflections; head dark with metallic- green reflections; antennae dark brown, except orange-yellow sixth funicular segment; thorax dark, with metallic-green reflections; wings infuscate but for hyaline basal 0.20; fore legs uniformly infuscate; middle legs uniformly infuscate, except for the white tip of tibiae and basal 4 tarsal segments; hind legs uniformly infuscate, except white basal 4 tarsal segments; abdomen dark.

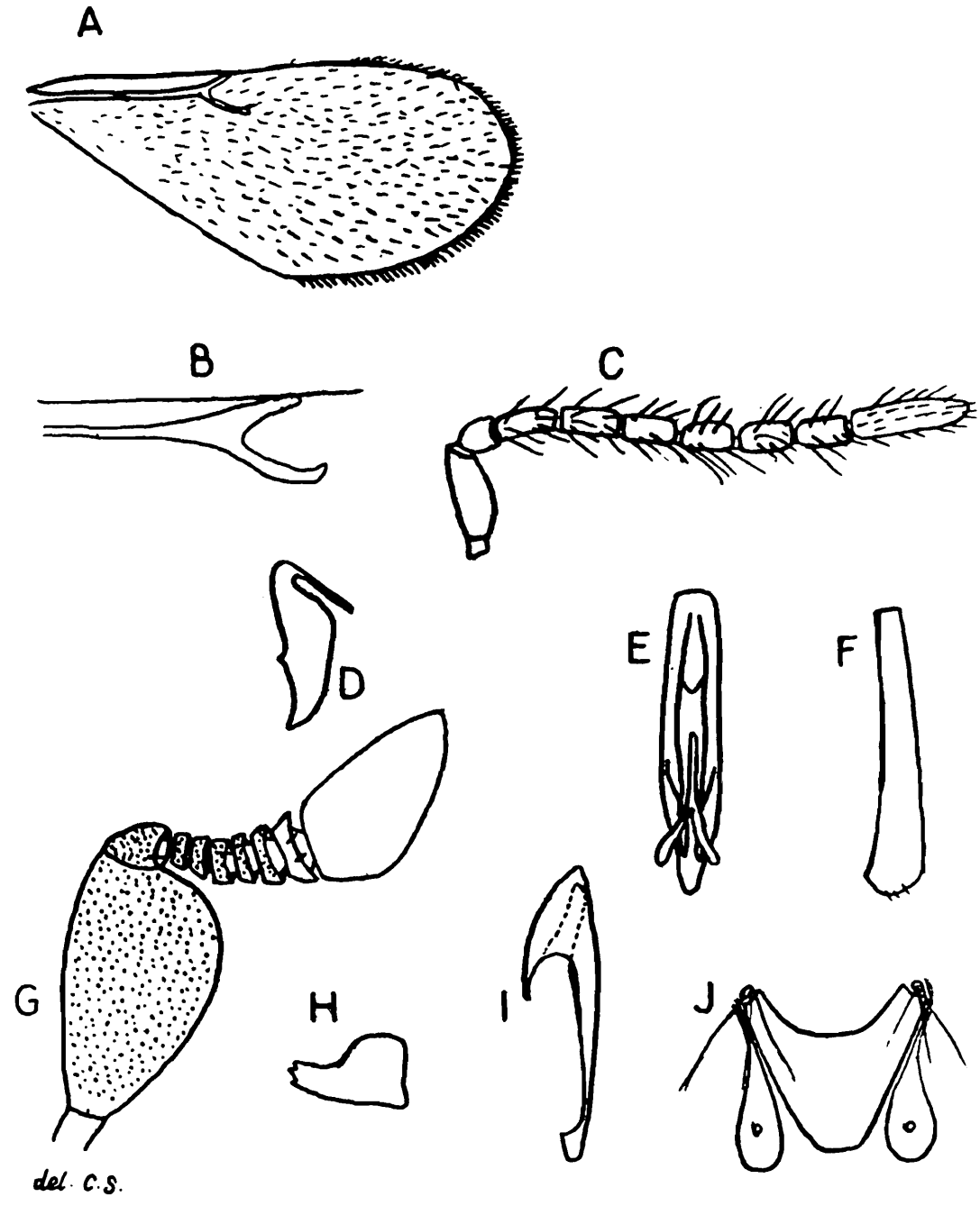

FIG. 197. *Proleurocerus fulgoridis* Ferrière : A. Fore wing, female; B. Stigmal venation, female; C. Antenna, male; D. First funicular segment, female; E. Genitalia, male; F. Outer plate of ovipositor, female; G. Antenna, female; H. Mandible, female; I. Second valvifer, female; J. Abdomen, female.

Head in front wider than long; punctate except for the smooth scrobes; frontovertex slightly more than 1.50 times longer than wide; ocellar triangle equilateral; lateral ocelli contiguous to eye, ocelloccipital space equal to ocellar diameter; gena equal to eye; antennae inserted near mouth; eyes bare; prominence between toruli equal to width of frontovertex; mandibles with 3 acute teeth; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape flattened, slightly less than 2 times longer than thick; pedicel slightly longer than thick, distinctly longer than following 2 funicular segments combined; funicular segments 1-6 distinctly thicker than long, gradually thickened apically; club entire, obliquely truncated at apex, 1.50 times longer than thick, distinctly longer than the funicle.

Thoarx uniformly reticulate; axillae contiguous; hind margin of scutellum rounded; mesopostphragma long, notched at apex; fore wings a little more than 2 times longer than wide; costal cell broad, vein *sm* long and parallel to margin; vein *st* arising from *sm; pm* separated from wing margin and distinctly shorter than *st;* marginal fringe short; hind wing slightly less than 4 times longer than wide; costal cell broad; marginal fringe short; middle tibial spur as long as metatarsus 8 stout pegs at tip of tibiae.

Abdomen shorter than thorax; subgenital plate reaching tip of abdomen.

Male differs from female as follows : Scape more or less cylindrical; pedicel distinctly shorter than first funicular segment; funicular segments 1-6 distinctly longer than thick, with long erect hairs; club entire, slightly longer than the preceding 2 funicular segments combined.

Type locality : Bangalore

Distribution : Guntur, Budampadu, Mysore, Bangalore, Poona

Hosts : Eggs of *Eurybrachys tomentosa* feeding on *Acacia arabica* and *Casuarina equisetifolia*

*Pseudanasius Hayat, Alam & Agarwal

1975 *Pseudanasius,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 21.

Female : Head umbilicately punctate as in *Neodiscodes,* but punctae larger and shallower; punctae reticulations not descending laterally below eyes gena densely hairy; eyes hairy; head dorsally almost minisciform; front margin straight; frontovertex somewhat flattened, wider than eye width; head in profile with eyes not over reaching occipital margin, facial impression deep, broad, semi-circular above; frons forming more or less acute angle with face; mandibles bidentate; maxillary palpi with 4 and labial palpi with 3

* Hayat (1986) has merged this genus as a synonym of *Aenasius* walk.

segments respectively, somewhat flattened, slightly widened below, nearly 3 times longer than thick, not over reaching facial impression; pedicel as thick as long; funicle with 5 transverse segments, basal 2 segments complete, distal 3 segments received in a cup-shaped cavity at base of club; club unsegmented, curved, longer than rest of antenna; mesoscutum and scutellum punctate-reticulate, punctae small and fine; axillae separate; scutellum rounded apically; wings similar in shape and infuscation to *Aenasius;* vein *m* longer than thick, shorter than *pm;* hind wings with a broad costal cell; abdomen with well developed paratergites, which become hair-thin the posteriorly; subgenital plate reaching to apex of abdomen; ovipositor concealed.

Type-species : Pseudanasius clavus Hayat *et al.*

This genus is very closely related to *Neodiscodes* Compere and *Aenasius* Walker It differs from *Neodiscodes* in the broader frontovertex, deeply impressed scrobes and antennae, specially club. It differs from *Aenasius* in antennae including club and umbilicate punctae, frontovertex not descending between the facial impression and anterior orbits; antennae in both sexes with 8 segments; scape, pedicel, funicle 5, long club.

The relationship of this genus to the other related genera may be seen in the following table :

1. Frontovertex 0.33 or less wider than head width, moderately convex; funicle 6 segmented, club 3 segmented	2
Frontovertex more than 0.33 of head width, flat, forming a more or less sharp angle with face; antennae in both sexes with a short, slightly compressed scape; funicle 5 segmented, distal 3 segments shorter and received in a deep cavity formed at base of club; club large, cylindrical, curved and much longer than rest of antenna; shallow, unbilicate punctae, not descending between eyes and facial impression.	*Psueudanasius* Hayat, Alam & Agarwal
2. Frontovertex 0.16-0.33 of head width, with coarse umbilicate punctae wholly or almost wholly reticulate; punctae at least moderately coarse, descend at least some way between eyes and facial impression	3
Frontovertex less than 0.16 of head width; punctae shallow, frequently reticulate, none but fine punctae descend between eyes and facial impression; scape strongly dilated, 2-2.50 times as long as wide; vein *pm* slightly shorter than *st*	*Neodiscodes* Compere

3. Vein *pm* not or not much longer than *st;* reticulate-punctae descending at least some of the way between eyes and facial impression; often scape strongly dilated below .. *Aneasius* Walker

Vein *pm* much longer than *st;* reticulate-punctae reaching top of facial impression but stopping short there, punctae descending between eyes and facial impression being scattered, shallower and only moderately coarse; scape in female not strongly dilated below *Blephyrus* Howard

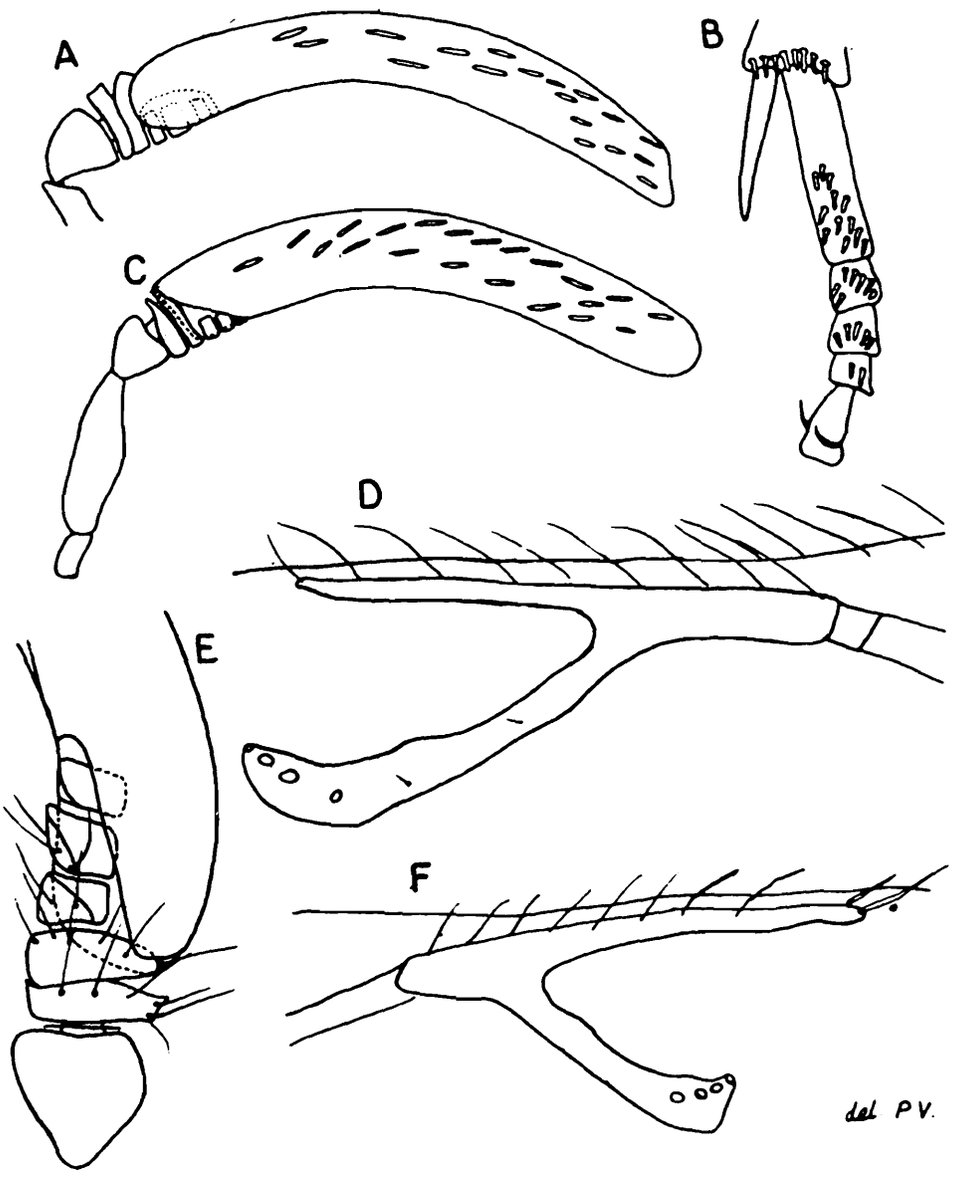

FIG. 198. *Pseudanisius clavus* Hayat, Alam & Agarwal : A. Antenna, male; B. Middle leg, female; C. Antenna, female; D. Stigmal venation; E. Pedicel, funicle, club, female; E. Pedicel, funicle, club, female; F. Stigmal venation, male. *(Modified from* Hayat *et al.).*

Pseudanasius clavus Hayat, Alam & Agarwal

1975 *Pseudanasius clavus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (zool.) 9 : 23.

Female : Length 1.89 mm. Frontovertex green, with brassy and coppery lustre; facial impression mostly greenish, brassy above; interscrobal area green with a violet lustre; gena greenish-blue; antennae brownish-black.

Vertex 2.50 times as wide as long; frontovertex wider than long, more than 0.33 of head width; ocellar triangle obtuse-angled; ocellocular space less than ocelloccipital space; gena shorter than eye.

Pronotum, especially hind margin deep bluish-green; mesoscutum and scutellum dull green,with same brassy lustre; metanotum, propodeum brownish-black, shiny; fore wings infuscate; slightly over 2 times as long as wide; vein *m* 4 times longer than thick, shorter than *pm,* latter shorter than *st;* marginal fringe short; legs dark brown, only tarsal segments 1-4 yellow, last tarsal dusky; middle tibial spur shorter than metatarsus; abdomen dark brownish-black, with slight shine, shorter than thorax.

Type locality : Shencottah (Tenkasi)

Host : Ferrissia virgata Cockll.

Trechnites Thomson

1848 *Metallon,* Walker, *List.Hym. Brit. Mus. Chalcid.,* 2 : 219.

1875 *Metallon,* Thomson, *Hym. Scand.,* 5 (4) : 169. (Lapsus for *Trechnites* Thomson).

1875 *Trechnites,* Thomson, *Hym. Scand.,* 5 (4) : 118, 169.

1910 *Psylledontus,* Crawford, *Proc. US nat. Mus.,* 38 : 88.

1915 *Metallonella,* Girault, *Mem. Queensland Mus.,* 4 : 77.

1960 *Trechnites,* Hoffer, *Acta Fauna Ent. Nat. Pragae,* 6 : 109.

1961 *Trechnites,* Ferrière, *Entomophaga,* 6 (1) : 39.

1969 *Trechnites,* Graham, *Polsk. Pismo Ent.,* 39 (2) : 243.

1979 *Trechnites,* Krombein *et al., Hymen.* N. America, 1 : 961.

Female : Body small, flat; head shiny; vertex wide; frons finely densely punctate, antennae inserted close to the mouth; scape rather stout, as high as head; pedicel stout, more than 2 times as long as thick; funicle with 5 segments; first funicular segment as long as thick; second and third slightly thicker than long; fourth and fifth as long as thick; club equal to the preceding 4 segments combined, but not much thicker than funicle; mesonotum and scutellum shiny; wing with long marginal fringe; vein *m* very short; *st* a little longer; *pm* short; ovipositor concealed.

Male : Antennae very long; scape as in female; pedicel 1.50 times as long as thick; funicle with 6 elongate segments; well separated from each other and 2 times as long as thick; with 2 semi whorls of setae; club cylindrical; body yellowish-brown.

Type-species Trechnites fuscitarsis (Thomson)

KEY TO SPECIES

1. Club unsegmented; funicular segments 3-5 longer than thick	*T. aligarhensis* Hayat, Alam & Agarwal
Club with 3 segments; pedicel 2.50 times as long as thick	*T. manaliensis* Hayat, Alam & Agarwal

Trechnites aligarhensis Hayat, Alam & Agarwal

1975 *Trechnites aligarhensis,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 90.

Female : Length 1.23 mm. Body metallic-black; frontovertex bluish-green, scrobes, gena and temple violet; radicle, scape and pedicel except apex, browish-black, rest of scape and pedicel yellow; first 2 funicular segments slightly suffused brown, remaining funicular segments and club yellowish-brown; pronotum black; scutum violet, scutellum metallic-green, rest dark brown; fore wings hyaline; fore coxae and femora brown; tibiae with a brown patch above in distal 0.50, trochanters, rest of tibiae and tarsi orange-yellow; middle legs orange-yellow; only coxae brownish-yellow, femora and tibiae faintly suffused brown; hind femur brown; hind tibia with a ring of brown at basal 0.33, tibia and tarsus yellow; abdomen blackish-brown.

Frontovertex reticulate, sparsely reticulately-punctate, with fine hairs; gena finely reticulate; facial impression almost smooth; eyes with very short, fine white hairs; dorsum of head slightly more than 2 times as wide as long; frontovertex narrow, less than 0.33 of head width and 0.50 of longer than its own width; ocellar triangle obtuse-angled, lateral ocelli almost contiguous to eye, ocelloccipital space about 2 times ocellar diameter; gena shorter than eye; antennal sockets near to facial margin; scrobes deep, triangular, long, convergent and meeting above just in front ocellus, sides subcarinated; scape slender, about 6 times as long as thick; pedicel more than 2 times as long as thick and as long as the 3 following funicular segments combined; first funicular segment a little longer than thick, second segment quadrate, segments 3-5 longer than thick; club unsegmented, slightly longer than the preceding 3 funicular segments combined.

Mesoscutum and scutellum with prominent hexagonal reticulations, those of sides of scutellum elongate and irregular; parapsidal furrows absent; scutellum triangular, acutely pointed apically; fore wings slightly less than 2.50 times as long as wide; venation not reaching middle of front margin; vein *m* punctiform; *pm* absent; vein *st* very long; speculum narrow, not interrupted behind; middle tibial spur shorter than metatarsus; tip of tibiae and 1-4 tarsal segments bearing 5, 9, 6, 6 and 4 pegs respectively.

Abdomen shorter than thorax; ovipositor concealed.

Type locality : Aligarh

Trechnites manaliensis Hayat, Alam & Agarwal

1975 *Trechnites manaliensis,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 88.

Female : Length 1.20 mm. Body brownish-black; head darker brown; scape except narrowly at apex brownish-black; pedicel except apical margin ventrally brown; funicular segments and first club segment, second and third club segments above brown; rest of antennae pale yellow to whitish; pronotum brownish-black, mesoscutum dark violet, axillae black, scutellum lustrous-green, pleura and sterna dark brown; wings hyaline; fore wings discal setae pale brown; veins brownish-yellow; fore legs brown except yellow apical 0.25 of tibial and tarsal segments 1-4; middle legs dark brown except yellowish-brown trochanters, apical 0.20 of femora, extreme apices of femora, bases and apical 0.66 of tibiae and 1-4 tarsal segments yellow; last tarsal segment fuscous; abdomen dark brown, dorsum at base green, apex slightly violet.

Head reticulate; frontovertex with fine scattered setigerous aciculate punctae; dorsum 2.50 times wider than long; frontovertex about 0.33 of head width, a little longer than wide; ocellar triangle obtuse; ocellocular space less than ocellar diameter; ocelloccipital space equal to ocellar diameter; head from side, with eye suboval, hairy; gena shorter than eye; head in front, wider than high; eyes reaching to more than 0.66 of head depth; distance from sockets to facial margin equal to width of socket; antennae inserted on level of lower orbital border; scrobes deep, triangular, sides not strongly carinate; mandibles with 2 acute teeth and a broad truncature; maxillary and labial palpi with 3 segments; scape long, slightly thickened in middle, longer than funicle about 5 times as long as thick, pedicel more than 2 times longer than thick and longer than the following 3 funicular segments combined; funicular segments thicker than long but not tranverse, gradually longer; basal 3 segments shorter than distal 2 segments; club large, 3 segmented, slightly longer than the preceding 4 segments combined.

Thorax hexagonal-reticulate, much stronger on scutellum; dorsum with dark setae, apex of scutellum with a pair of longer bristles; pronotum with front margin broadly concave, sides of concavity with broad ridges; hind margin with a row of 24 setae; mesoscutum wider than long, parapsidal furrows indicated only anteriorly; scutellum a little wider than long, pointed at apex; axillae confluent; mesopostphragma notched apically; fore wings 2.33 times longer than wide; vein *m* punctiform, not touching wing margin; *pm* absent; *st* long, with 4 sensoria; speculum narrow, closed behind by a single row of setae, distal margin of speculum bordered by 8 peg like setae; marginal fringe short; hind wings broad, 3.50 times longer than wide; marginal fringe slightly less than 0.25 of width of disc; middle tibial spur shorter than metatarsus; tip of tibia and tarsal segments 1-4 with 4, 9, 7, 4 and 4 pegs respectively.

Abdomen shorter than thorax; cercal plates situated at middle; second valvifers wide, with a ridge on outer margin; and a ridge on inner margin which extends to 0.50 length of the plate; third valvulae reflected upwards at apex of abdomen; outer plates of ovipositor triangular with a groove on outer margin in which fits a broad plate that extends behind as a lance-shaped curved plate; first valvifers elongate; ovipositor extends from fourth segment, concealed.

Male : Like female. Length 1.03 mm.

Type locality : Mangli (Himachal)

Host : Euphyllura sp.

SPECIES INCERTAE SEDIS

Trechnites secundus (Girault)

1915 *Psyllendontus secundus,* Girault, *Ann. ent. Soc. America,* 13 : 28.
1938 *Psylledontus secundus,* Mani, *Cat. Indian Ins.,* 23 : 96.
1940 *Psylledontus secundus,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 17.

This species is unknown to me.

Type locality : Ceylon

Host : Unknown gall-forming Psyllid

4. COPIDOMOSA — GROUP OF GENERA

Acridencyrtus Subba Rao

1979 *Acridencyrtus,* Subba Rao, *Orient. Ins.,* 13 (1-2) : 144.

Female : Head viewed laterally large; occiput much higher than pronotum; fronto-occipital face somewhat inflexed, facial outline of dorsal part somewhat convex, face forming an angle at antennal sockets; viewed from above head almost triangular, vertex very narrow, ocellar triangle acute, front ocellus not seen as it is advanced forward and very much below; scrobes absent; eyes elongate, not hairy, gena very long, genal furrow absent; mandibles with 3 teeth; antennae with 9 segments; 1.1.6.1; club triangularly truncate; thorax, legs, abdomen more or less as in *Homalotylus* Mayr, axillae not separated; fore wings with a smoky patch in the middle; veins *st* and *pm* meeting in an acute angle, vein *pm* only slightly shorter than *st;* ovipositor well exserted, a little more than 0.33 of abdomen.

Male : Like female.

Type-species : Acridencyrtus ambiguous Subba Rao.

Acridencyrtus Subba Rao is closely related to *Homolotylus* Mayer, *Anisotylus* Timberlake, *Cyrtocoryphus* Timberlake and

Isodromus Howard; differs from *Homalotylus* in head being abnormally large and triangular above.

Acridencyrtus ambiguous Subba Rao

1979 *Acridencyrtus ambiguous,* Subba Rao, *Orient. Ins.,* 13 (1-2) : 145.

Female Length 1 75-2.00 mm. Body black; antennae except club pale yellow-brown; middle femora and tibiae, basal part of hind tibiae white; apices of middle tibiae, spurs, middle tarsi pale white to yellow, hind tarsi dark brown; fore wings with a dark smoky patch in the middle; ovipositor yellow with tip somewhat dark.

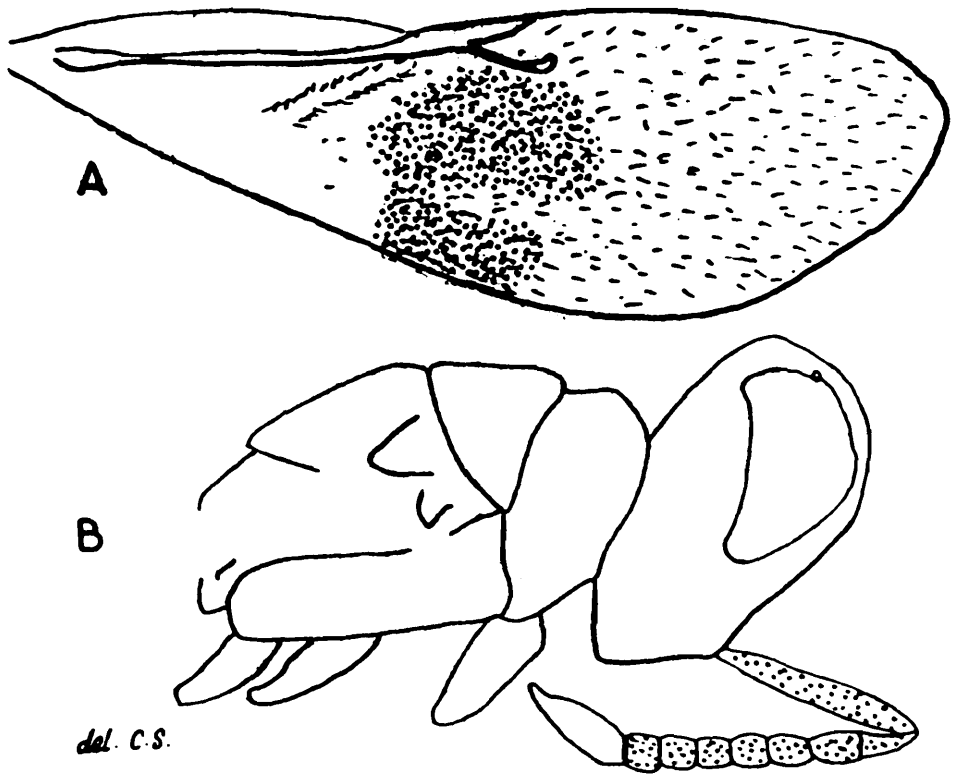

FIG. 199. *Acridencyrtus ambiguous* Subba Rao, female : A. Fore wing; B. Head and thorax side view. *(Modified from* Subba Rao).

Head from above and laterally like that of Acridiidae; ocellar triangle acute-angled; lateral ocelli almost contiguous with eye; scape slender, cylindrical, 9 times as long as thick; pedicel narrow, a little less than 0.25 of scape; funicular segments 1-4 longer than thick, fifth almost quadrate; sixth thicker than long; club longer than the preceding 3 funicular segments combined, triangularly truncate.

Vein *m* very long, but shorter than *st;* costal cell wide with 2 rows of 5 setae; marginal fringe very short; middle tibial spur only slightly shorter than metatarsus.

Abdomen 0.60 of thorax; ovipositor a little over 0.33 of abdomen.

Male : Like female except head pale yellowish-white except vertex; scape pale white in the basal 0.33, funicle dark brown, club yellow.

Type locality : Bangaladesh : Rajashahi University Campus

Distribution : Bangaladesh; India : Bangalore

Hosts : Phenococcus mangiferae Green on *Mangifera indica* L.; pupa of *Chrysopa* on *Citrus.*

Atropates Howard

1898 *Atropates,* Howard, *Proc. US nat. Mus.,* 21 : 236.
1904 *Atropates,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 305.
1909 *Atropates,* Schmiedeknecht, *Gen Ins.,* 97 : 256.
1935 *Atropates,* Ferrière, *Bull. ent. Res.,* 27 (3) : 400.
1938 *Atropates,* Mani, *Cat. Indian Ins.,* 23 : 95.
1957 *Atropates,* Mahdihassan, *Z. angew. Ent.,* 40 (1) : 80.
1979 *Atropates,* Krombein *et al.,* Hymen. N. America, 1 : 961.

This genus resembles *Eusemion* in its main characters and agrees with it in the antennae brown except at the very tip; vein *m* longer than *st.* It differs in the absence of a curved carina in frontal impression; club not exceptionally stout. It also differs in the smooth, shiny abdomen, with fine scattered punctae; ocellar triangle acute; axillae contiguous.

Type-species : Atropates collinsi Howard

Atropates hautefeuilli (Mahdihassan)

1923 *Microterys hautefeuilli,* Mahdihassan, *Sci. Assoc. Maharaja's Coll. Vizianagram,* 2 : 65.
1935 *Atropates (Microterys) hautefeuilli,* Ferrière, *Bull. ent. Res.,* 26 : 400.
1938 *Atropates hautefeuilli,* Mani, *Cat. Indian Ins.,* 23 : 95.

Female : Length 1.20 mm. Head and thorax orange-yellow, slightly brown on mesonotum, with some greenish reflections; scutellum more yellow; abdomen black, apical 0.50 of yellowish-brown above; scape yellow, with a black stripe along the ventral margin; pedicel yellow with a black spot above; funicular segments 1-4 and club blackish; segments 5-6 whitish; legs orange-yellow; tibia more yellowish; middle and hind tibiae each with 2 brown rings, front tibiae with only one brown ring near base; wings slightly infuscate, base and 2 oval spots, one behind vein *m* and the end of vein *sm,* other near the hind margin of the wing hyaline.

Head large, eyes rounded; and frons 0.33 of head; lateral ocelli situated near eye, nearer to the front ocellus than to each other; scrobe deep, sides converging above, margined; seen in front head a little wider than long, with cheeks rounded, as long as eye; antennae inserted on sides of clypeus; scape flattened, thick, less than 2 times as long as thick; pedicel narrow, 2 times as long as thick, first 2 funicular segments small, rounded, following segments thickening gradually, club with 3 segments, thicker than funicle, about as long as preceding 5 segments combined.

Mesonotum finely shagreened, almost smooth, slightly broader than long; axillae narrow, meeting; scutellum finely reticulate, dull, as long as mesonotum; propodeum very short, hidden under the tip of scutellum; wings large, reaching much beyond the tip of abdomen; vein *sm* thin, vein *m* somewhat thickened, about 2 times as long as broad; vein *st* narrow, not or scarcely longer than *m;* vein *pm* shorter than *st; sm* with 4-5 hairs, under the curve with a brownish spot covered by several black hairs; a little farther on an oblique line of ciliae; rest of base of wing glabrous; legs short, femora and end of tibiae slightly broadened and compressed.

Abdomen shorter than thorax, not much pointed behind; ovipositor scarcely protruding.

Male : Length 1.20 mm. Body entirely black, with greenish reflections on head and thorax; face more shining green, antennae and legs entirely yellow, pedicel and tip of flagellum slightly brown; middle and hind tibiae with more or less distinct brownish 0.50 rings; antennae elongate; scape short, slightly thickened in the middle; pedicel very short, not longer than thick; following segments 3 times as long as thick, last a little narrower and shorter than pedicel; funicular segments covered with long hairs; club indistinctly divided, shorter than the preceding 2 segments combined; head more transverse and vertex a little wider; wings hyaline.

Type locality : Bangalore

Host : Lac insects

Cerchysius Westwood

1832 *Cerchysius,* Westwood, *Philos. Mag.,* 1 : 178.
1875 *Encyrtus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 702.
1875 *Cerchysius,* Thomson, *Skand. Hymn.,* 4 : 141.
1884 *Aserira,* Cameron, *Biol. Cen. Amer. Hym., 1 : 127.*
1904 *Cerchysius,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 299
1909 *Cerchysius,* Schmiedeknecht, *Gen. Ins.,* 97 : 727.
1918 *Cerchysius,* Girault, *Ent. News,* 29 (2) : 65-66.
1921 *Cerchysius,* Mercet, *Fauna Iberica,* 505.
1954 *Cerchysius,* Krombein *et al.,* Hymen. N. America, 1 : 951.

Female : Head hemispherical; occipital border rounded; ocellar triangle equilateral; eyes large, oval, distinctly pubescent; mandible tridentate; maxillary palpi with 4 segments, terminal segment long and equal to the preceding 3 segments combined; labial palpi with 3 segments; antennae short, swollen apically, inserted close to the mouth border, with 11 segments : 1.1.6.3; scape slightly compressed apically; pedicel long; funicular segments gradually becoming thicker and shorter apically; club thicker than funicle, rounded apically.

Parapsidal furrows absent; axillae contiguous; scutellum traingular, somewhat convex; propodeum large, wings broad, hyaline, often clouded in the middle; speculum present; marginal fringe short; vein *m* short, equal to *st;* vein *pm* subequal to *st;* middle tibial spur stout, equal to metatarsus; hind tibial spurs double.

Abdomen large, subtriangular; ovipositor large, densely setose.

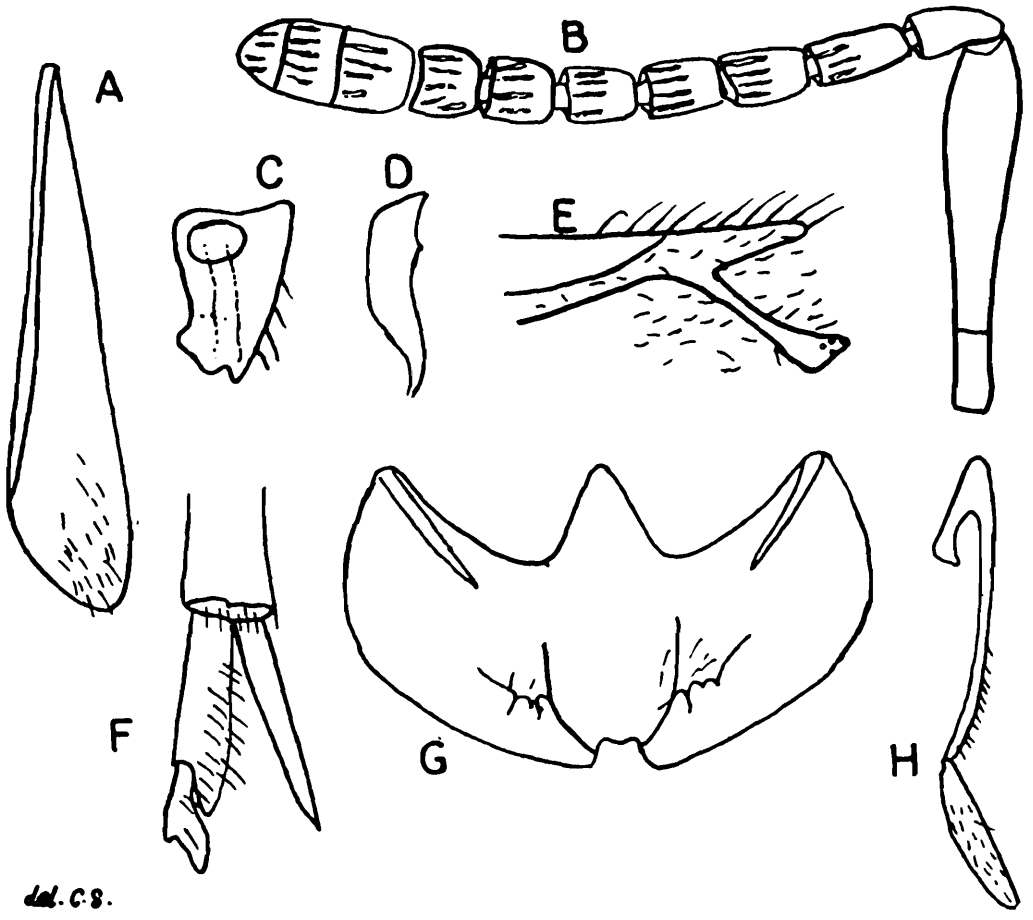

Fig. 200. *Cerchysius laticeps* Kerrich, female : A. Outer plate; B. Antenna; C. Mandible; D. First valvifer; E. Stigmal venation; F. Middle leg; G. Subgenital plate; H. Second valvifer.

Male : Frons wide; ocellar triangle obtuse; antennae inserted on lower orbital border; scape short, sometimes conspicuously

compressed in the middle; pedicel very short, globose; funicular segments cylindrical, densely setose, with verticillate hairs; club entire; thicker than funicle; wings hyaline, abdomen oval.

Type-species : Cerchysius subplanus (Dalman)

Cerchysius laticeps Kerrich

(Fig. 200)

1954 *Cerchysius laticeps,* Kerrich, *Ann. Mag. nat. Hist.,* 7 : 372.
1975 *Cerchysius laticeps,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 63.

Antennae dark brown; pedicel equal to the first funicular segment.

Type locality : Guntur

Distribution : India, Guntur

Host : Coccid

Hexacladia Ashmead

1891 *Hexacladia,* Ashmead, *Ins. Life, US Dept. Agric.,* 3 (11-12) : 456.
1892 *Hexacladia,* Howard, *Proc. US nat. Mus.,* 15 (905) : 364.
1904 *Hexacladia,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 301.
1909 *Hexacladia,* Schmiedeknecht, *Gen. Ins.,* 97 : 235.
1911 *Sophencyrtus,* Crawford, *Proc. US nat. Mus.,* 41 : 275.
1926 *Hexacladia,* Timberlake, *Proc. US nat. Mus.,* 96 (3) : 12.
1965 *Hexacladia,* De Santis, *Ann. Comn. Inv. Cient. Prov. Buenos Aires,* 4 : 114.
1970 *Hexacladia,* Agarwal, *Mushi,* 44 (4) : 25.
1972 *Hexacladia,* Burks, *Proc. ent. Soc. Washington,* 74 (4) 363.

Head very broadly transverse, including eyes, much wider than thorax; face convex, space between eyes and mandibles longer than eye; eye broadly oval, bare; ocelli 3, rather close together and substriangularly arranged; labrum very small, transverse, 2 times as wide as long; mandibles very small, oblong, truncate at tips, bidentate; maxillary palpi rather long, with 5 segments; labial palpi short, with 3 segments; antennae in both sexes with 11 segments; inserted on the middle of the face; scape long, cylindrical, reaching far above vertex; in male 6 funicular segments with long hairy rami; basal branch longest, others gradually shorter; first funicular segment very short, following segment long, at least 3 times longer than the first; club long, fusiform, 3 segmented; in female flagellum subclavate; first funicular segment almost as long as the following 3 segments combined; last 5 funicles short and very gradually longer and thicker; club of 3 segments; thorax in male strongly developed, highly convex, resembling somewhat an Eucharid; in female less

strongly developed; mesonotum transverse, smooth, polished, without trace of furrows; scutellum longer than wide, rounded behind, highly convex; axillae transverse, convex; metathorax short, smooth, spiracles very large, rounded; middle legs slightly longest, tibiae long, slender, cylindrical about 0.33 times longer than tarsi; spur more than 0.50 of metatarsus; tarsi stouter than hind tarsi, segments very short; hind femora and tibiae slightly dilated, tarsi slender, cylindrical and almost as long as tibiae; wings banded; vein *sm* reaching middle of wing before joining costa, costal cell somewhat wide; vein *m* thickened, a little longer than *st; st* clavate, curved upwards; *pm* longer in male than in female.

Abdomen in both sexes small in proportion to the thorax; in male long, oval with 7 segments, first longest, others short, about equal; in female subcompressed, with 6 segments; hypopygium plough-share shaped, ovipositor slightly exserted; as in male, the first tergite longest.

Type-species : Hexacladia smithi Ashmead.

Ashmead (1891) erected *Hexacladia* for his *Hexacladia smithi,* males having 6 funicular rami. Timberlake (1926) erected *Hexacnemus* for males having rami in funicular segments. He, however, pointed out that, "In Howard's table of Tetracnemini male runs to *Hexacladia* on account of the 6 branched antennae, but is certainly not even closely allied to that very characteristic genus." De Santis (1963) in the "Key to the males of Encyrtidae of Republic Argentina" pointed out salient features of these 2 genera by placing them in the same couplet. He differentiated them on the basis of head pattern, mandibles, antennae and wing venation. *Hexacnemus,* "head with puncts" is however, not mentioned by Timberlake in his original description for the genus.

Hexacladia indica Agarwal

(Fig. 201)

1972 *Hexacladia indica,* Agarwal, *Mushi,* 44 (4) : 25.

Male : Length 1.90 mm. Head and thorax ferruginous to brown; antennae uniform brown; fore coxae, trochanters, basal 0.75 of femora and basal 0.25 of tibiae brownish, rest light brown.

Head wider than long; occipital margin acute; frontovertex very wide; ocellar triangle acute-angled; ocellocular space 2 times ocellar diameter; lateral ocelli contiguous with occipital margin; eyes naked; gena prominent, a little less than eye; scrobes deep, convergent; antennal sockets on level of lower oribital border; mandibles with one tooth and a truncation; maxillary palpi with 4 segments, fourth segment equal to the preceding 2 segments combined; labial palpi

with 3 segments, third segment longer than others combined; funicle 6 segmented; funicular segments with rami; scape elongate; over 3 times longer than thick, pedicel slightly thicker than long; funicular segments 1-2 shorter than pedicel at base, funicular segments gradually longer; club solid, over 6 times longer than thick, more than 2 times funicular segments combined.

Pronotum with front margin broadly notched in the middle, hind margin convex; axillae moderately contiguous at apex; scutellum convex, raised at apex; wings hyaline, costal cell very wide; vein *m* 2.50 times longer than thick; vein *pm* very long, 2.50 times vein *m; st* about 1.50 times longer than vein *m;* marginal fringe short; hind wings hyaline; costal cell narrow; tibial spur equal to metatarsus; tip of tibiae with a row of 13 pegs; metatarsus and tarsal segments 2-4 with 11, 3, 3 and 3 pegs respectively; tibial spur equal to metatarsus; hind femora in distal 0.50 and tibiae greatly compressed; metatarsus equal to following 3 tarsal segments combined; tibial spur double.

Abdomen short, a little over 0.50 times thorax, sub-triangular; cercal plates near apical 0.33.

Type locality : Aligarh

Host : Pseudococcus sp. on *Citrus medica* L.

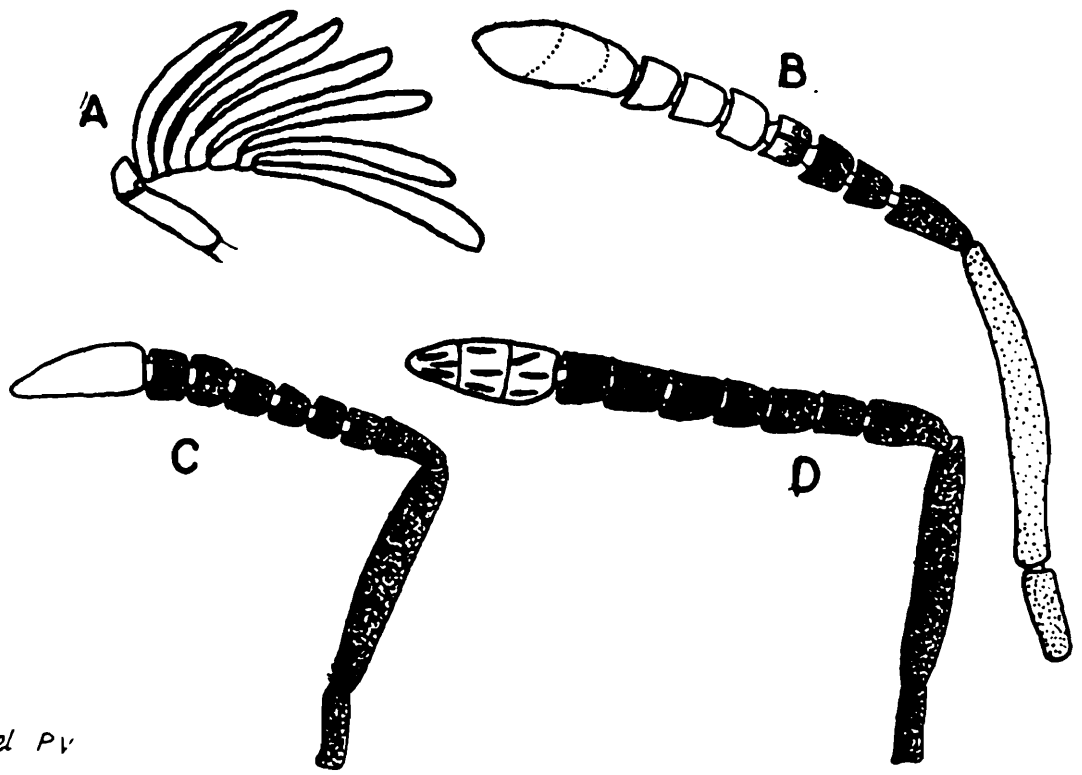

FIG. 201. A. *Hexacladia indica* Agarwal, male : Antenna; B. *Homolotylus ferrierei* Hayat, Alam & Agarwal, female : Antenna; C. *Homolotylus flaminius* (Dalman), female : Antenna; D. *Homalotylus nigritus* (Agarwal), female : Antenna. *(Modified from* Agarwal).

Hexacladia indica resembles *Hexacladia* on one hand and *Hexacnemus* on the other It is related to *Hexacladia* in mandibles with a single tooth and a truncature, well developed veins *m, pm* and *st* and hind legs with swollen and expanded femora and tibiae and resembles *Hexacnemus* in the punctate head nearly similar antennal characters. Placement in *Hexacladia* is tentative.

Homalopoda Howard

1894 *Homalopoda,* Howard, *J. Linn. Soc. London* (Zool.) 25 : 90.
1904 *Homalopoda,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 305.
1909 *Homalopoda,* Schmiedeknecht, *Gen. Ins.,* 97 : 259.
1938 *Homalopoda,* Mani, *Cat. Indian Ins.,* 23 : 96.

Female : Antennae with 9 segments; scape reaching to vertex, cylindrical, slender; pedicel slender, subcylindrical, nearly 2 times as long as broad; funicular segments slender, cylindrical, subequal in length, each longer than pedicel; club as long as the preceding 3 funicular segments combined, very elongate-ovate, slightly wider than funicle or somewhat flattened, in which case it is considerably wider; head with long flattened face and deep antennal grooves converging towards vertex; genal sulcus distinct, from eye to mouth; vertex and dorsal surface of eyes flat, making the head appear triangular from the side; eyes rather close, not large and mainly dorsal, ocelli forming an acute-angled triangle; occipital ridge rounded.

Pronotum sharply incised in middle; scapulae narrow towards tips, barely meeting; mesoscutellum declivous, subtriangular, rather rounded at tip and having a sparse tuft of bristles; metascutum very short; fore, middle legs normal, rather short; hind femora somewhat enlarged, convex on the outer surface, plane on the inner; hind tibiae flattened laterally; wings fuscous, with oblique hairless line below stigma and with several hyaline spots; vein *sm* short, reaching margin before 0.50 of the wing length; vein *m* short, obscured by brown bristles, but longer than the short *st*, which obliques into the wing surface at an acute angle with the post costa; vein *pm* wanting.

Abdomen as long as thorax, concave above, subtriangular although somewhat rounded towards apex; ovipositor exserted to about 0.16 of the abdomen.

Tyepe-species : *Homalopoda cristata* Howard.

This genus is the one of the intermediate forms between the Encyrtidae and the Eupelmidae, and presents in fact quite as many Eupelmidae as Encyrtidae characters.

Homalopoda cirstata Howard

1894 *Homalopoda cristata,* Howard, *J. Linn. Soc. London* (Zool.) 25 : 91.
1896 *Homalopoda cristata,* Howard, *Proc. US nat. Mus.,* 18 : 640.
1909 *Homalopoda cristata,* Schmiedeknecht, *Gen. Ins.,* 97 : 259.
1938 *Homalopoda cristata,* Mani, *Cat. Indian Ins.,* 23 : 96.

Female : Length varying from 1.11-1.86 mm; expanse varying from 2.26-2.79 mm. Body metallic-greenish-blue; dorsal surface of head golden-green; mesoscutellum copper-coloured; antennae very dark brown, scape slightly metallic, all legs black or slightly metallic, middle and hind tarsi dirty white with terminal segment brown, fore tarsi light brown; face lustrous, very faintly shagreened; vertex deeply, closely and finely shagreened; mesocutum as with face; mesoscutelum as with vertex; abdomen smooth, shining from the occipital ridge near the eyes arise 2 slender blunt modified hairs or scales, plainly flattened anterio-posteriorly and which may resemble the "Schmale abgerundete Lamellen," which occupy a similar position in the European *Habrolepis dalmanni* Westwood.

Mesoscutellum with a sparse tuft of bristles near tip; wings fuscous, hyaline at base and with 6 hyaline spots, 3 on either border of the wing, and all touching wing border except the proximal caudal one, which is separated from border by a continuation of the fuscous; 2 distal ones crescent-shaped and others roundish, proximal one on the costal margin considerably smaller than others and situated half way between beginning of fuscous shading and vein *m* with many dark bristles, making a distinct brown patch at that point.

Type locality : St. Vincent,

Host : *Aspidiotus secretus*

Distribution : India, Europe.

Homalotylus Mayr

1820 *Encyrtus* (partim) Dalman, *Svensk. Vet. Akad Handl.,* 41 : 340.
1875 *Homalotylus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 752.
1875 *Nobrimus,* Thomson, *Skand. Hym.,* 4 L 137.
1904 *Homalotylus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 301.
1909 *Homaltylus,* Schmiedeknecht, *Gen. Ins.,* 97 : 235.
1913 *Mendozaniella,* Bréthès, *Ann. Mus. Hist. nat. Buenos Aires,* 24 : 97.
1916 *Hemaenasoidea,* Girault, *Ann. ent. Soc. America,* 9 : 305.
1919 *Homalotylus,* Timberlake, *Proc. US nat. Mus.,* 56 (2293) : 134.
1919 *Homalotylus,* Masi, *Ann. Genova Mus. Civ. Stor. Nat.,* (3) 48 : 295.
1921 *Homalotylus,* Mercet, *Fauna Iberica,* 515.
1936 *Lepidaphycus,* Blanchard, *Rev. Soc. ent. Argentina,* 8 : 13.
1938 *Homalotylus,* Mani, *Cat. Indian Ins.,* 23 : 88.
1951 *Homalotylus,* Risbec, *Mem. Inst. Fr. Africa Noire,* 13 : 151.
1952 *Homalotylus,* Ribsec, *Mem. Inst. Sci. Madagascar Ser. Ent.,* 2 : 5, 6, 25.

1959 *Homalotylus,* Hoffer, *Acta Ent. Mus. Nat. Pragae,* 33 : 30.
1963 *Echthroplexis,* De Santis, *Ann. Com. Inv. Cient. Buenos Aires,* 4 : 162.
1963 *Homalotylus,* Hoffer, *Acta ent. Mus. Pragae,* 35 : 582.
1966 *Neoaenasioidea,* Agarwal, *Proc. Indian. Acad. Sci.,* (B) 63 : 71.
1969 *Homalotylus,* Graham, *Polsk. Pismo Ent.,* 39 (2) : 233.
1979 *Homalotylus,* Krombein *et al.,* Hymen. N. America, 1 : 947.

Female : Head ovate, with some large punctae on frons; eyes large; ocelli in an acute-angled or equilateral triangle; lateral ocelli very close to eye; mandible large; tridentate, maxillary palpi with 4 and labial palpi with 3 segment; antennae inserted close to mouth border, with 9 segments; 1.1.6.1; scape long, cylindrical or slightly expanded, pedicel longer than apical thickness, usually larger than the following segments; funicle cylindrical with segments relatively short, stout, club completely white or pale yellow, strongly obliquely truncate apically.

Thorax without parapsidal furrows, with a transverse row of white setae; axillae contiguous; scutellum triangular, slightly convex; finely and densely punctate; pubescent in front; propodeum tomentose; fore wings large, more or less infumate in the middle; vein *sm* long; *m* short, almost punctiform; vein *st* long, parallel to the front margin; vein *pm* generally long, equal to *st;* legs elongate; middle tibial spur equal to metatarsus, which latter strongly spined inside; hind tibial spur equal to metatarsus, which latter strongly spined inside; hind tibial spur single.

Abdomen oval, flat, shorter than thorax; first tergite transverse; ovipositor concealed or exserted.

Type-species : *Homalotylus flaminius* (Dalman)

KEY TO SPECIES

1. Ovipositor exserted	3
Ovipositor not exserted	2
2. Head in front longer than wide; head and thorax greenish-black to blue-black	*H. flaminius* (Dalman)
Head in front not longer than wide; head yellowish-brown, sometimes greenish-bronzy	*H. terminalis* (Say)
3. Body black; antennae black, with white club; middle and hind tarsal segments 1-4 white	*H. nigritus* (Agarwal)
Body not wholly black.	4
4. Pedicel equal to the following 2 funicular segments; middle tibial spur a little longer than metatarsus.	*H. ferrierei* Hayat, Alam & Agarwal
Pedicel shorter than the following 2 segments combined; middle tibial spur much longer than metatarsus.	5
5. Funicular segments 1-5 brown, segment 6 and club white.	*H. albiclavatus* (Agarwal)
Antennae uniformly pale dusky	*H. indicus* (Agarwal)

Homalotylus flaminius (Dalman)

(Fig. 201 & 202)

1818 *Encyrtus apicalis,* Ratzeburg, *Ichn. Forstin.,* 2 : 145.
1820 *Encyrtus flaminius,* Dalman, *Svensk. vet. Akad. Handl.,* 41 : 340.
1844 *Encyrtus eitelweini,* Ratzeburg, *Ichn. Forstin.,* 1 : 270.
1875 *Homalotylus flaminius,* Thomson, *Skand. Hym.,* 4 : 139.
1907 *Homalotylus, flaminius,* Masi, *Bol. Lab. Zool. Gen. Agr. Portici,* 1 : 288.
1909 *Homalotylus flaminius,* Schmiedeknecht, *Gen. Ins.,* 97 : 235.
1913 *Mendozaniella mirabilis,* Bréthès, *Ann. Nac. Hist. Mus. Buenos, Aires,* 24 : 98.
1917 *Homalotylus orci,* Girault, *New Javan. Hym. Washington D.C.,* 3.
1917 *Homalotylus microgaster,* Girault, *Insc. Inc. Menst.,* 5 : 134.
1919 *Homalotylus flaminius,* Masi, *Ann. Mus. Stor. Lat. Genova,* 48 : 296.
1921 *Homalotylus flaminius,* Mercet, *Fauna Iberica,* 519.
1923 *Homalotylus flaminius,* Mercet, *Bol. Soc. Espan. Hist. Nat.,* 23 (3) : 143.
1924 *Homalotylus flaminius,* Timberlake, *Proc. Hawaii. ent. Soc.,* 5 (3) : 430.
1936 *Lepidaphycus bosqui,* Blanchard, *Rev. Soc. Ent. Argentina,* 8 : 14.
1938 *Homalotylus flaminius,* Mani, *Cat. Indian Ins.,* 23 : 89.
1940 *Homalotylus flaminius,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 14.
1945 *Homalotylus flaminius,* d'Araujo e Silva, *Bol. Fitossan,* 1 (1) : 29-35.
1949 *Homalotylus flaminius,* Ferrière, *Mitt. Schweiz. ent. Ges.,* 22 (4) : 378, 379.
1952 *Homalotylus flaminius,* Risbec, *Mem. Inst. Sci. Madagascar* (E) 2 : 25.
1955 *Homalotylus flaminius,* Rogojanu, *Bucharest Acad. Repub. Romine, Fil. Cluj. Stud. Cercet. Sti.,* (2) 6 (3-4) : 79.
1962 *Homalotylus flaminius,* Tawfik *et al., Soc. Ent. Egypt Bull.,* 46 :503.
1965 *Homalotylus flaminius,* Bakkendorf, *Ent. Meddel.,* 30 (2) : 133-134.
1968 *Homalotylus flaminius,* Trjpitzin, *Trudy Vses Ent. Obshch.,* 52 : 68, 69.
1975 *Homalotylus flaminius,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool) 9 : 65.
1979 *Homalotylus flaminius,* Krombein *et al.,* Hymen. N. America, 1 : 947.

Female : Length 2.00 mm. Body bluish-green, or greenish-blue black, largely bluish-green, with some yellow near the mouth and between the base of antennae; mesonotum blue; axillae and scutellum more or less green; propodeum shiny black with bluish reflections; abdomen blackish-blue; antennae blackish; scape blue; terminal funicular segments black, blue or white; club wholly white; tegula white at base and blackened apically; fore wing in the middle with a transverse infumate band; tip of wing slightly obscured; hind wing hyaline; legs black or blackish brown; middle tibial spur white; hind tibia white or pale.

Head oval, as long as wide, finely shagreened, with some scattered large punctae on vertex and frons; ocellar triangle acute; ocellocular space less than ocellar diameter; eyes large, elliptical, almost glabrous, diverging towards the mouth; head densely clothed with white setae; distance between toruli equal to the space from mouth to toruli; radicle equal to pedicel; scape long, concave mesially, equal to first 4 funicular segments combined; pedicel equal

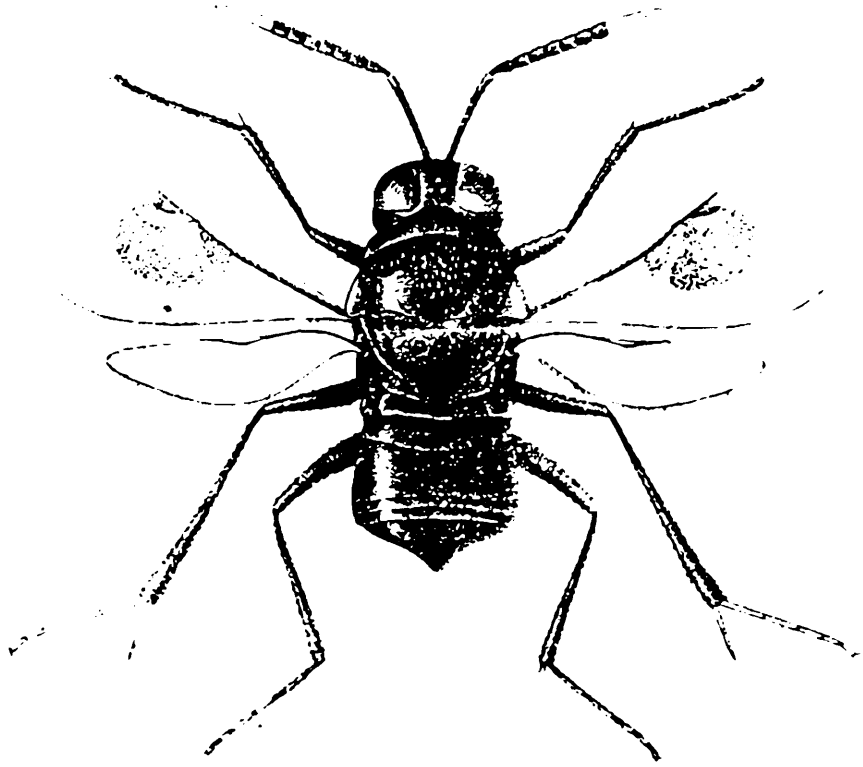

FIG. 202. *Homalotylus flaminius* (Dalman), female.

to the first funicular segment; funicular segments subequal; club strongly truncated apically, equal to about preceding 3 segments combined.

Mesonotum finely reticulately squamous, clothed with white pubescence, without or with trace of parapsidal furrows; axillae and scutellum densely shagreened-punctate, with black setae; propodeum narrow, shiny, in the middle with shagreened triangular area; wings broad, with complete speculum; vein *sm* swollen in the apical 0.33; vein *m* subpunctiform; vein *pm* equal to *st*; marginal fringe short; legs long; fore femur slightly compressed; inner border of middle metatarsus with a double row of stout spines along the whole length; middle tarsal segments 2-3 with stout spines; fore tarsal segment with one apical spine; fifth unarmed.

Abdomen oval, subtriangular, much shorter than thorax; surface of tergites reticulately-squamous; first tergite large, transverse; ovipositor concealed.

Male : Differs from female in the head being globose; wings less infumate than in female; length of body 2.00 mm.

Type-locality : Europe

Distribution : Cosmopolitan

Hosts : Larvae of Coccinellid beetles *Coccinella, Chilocorus, Chilomenes, Epilachna,* etc.

Homalotylus terminalis terminalis (Say)

1828 *Serlion terminalis,* Say, *Contr. Maclur. Lyc. Philad.,* 2 : 80.
1869 *Eutelus (?) scymnae,* Shimer, *Trans. Amer. ent. Soc.,* 2 : 385.
1885 *Homalotylus obscurus,* Howard, *Bull. Bur. Ent. US Dept. Agric.* 5 (old ser.) : 22.
1887 *Scelio terminalis,* Cresson, *Syn. Hym. N. America,* 248.
1900 *Homalotylus terminalis,* Ashmead, *Proc. US nat. Mus.* 22 : 378.
1909 *Homalotylus terminalis,* Schmiedeknecht, *Gen. Ins.,* 97 : 236.
1919 *Homalotylus terminalis,* Timberlake, *Proc. US nat. Mus.,* 56 (2293) : 148.
1979 *Homalotylus terminalis,* Krombein *et al.,* Hymen. N. America, 1 : 948.

This species is similar to *H. flaminius,* but head slightly wider than long, a little thicker; space between eyes and toruli considerably less than space between lower outer orbital border and occiput; sculpture as in *flaminius;* head and lower part of thorax brownish-yellow; head usually with bronzy or metallic-green lustre; mesopleura brown and metallic-blue; thorax and abdomen black; scutum metallic-green; propodeum and abdomen with bluish lustre or with brownish-yellow; tegula white; antennae dark drown or black; club yellowish-white; legs variable, mostly dark brown or black with middle femora brownish-yellow; tibial spur and middle tarsi yellowish-white, sometimes hind tibia and tarsi brown or black; fore tibia and tarsi pale brown; wing as in *H. flaminius;* ovipositor not exserted.

Male : Length 1.14-1.81 mm. Wing markings less distinct than in female.

Type locality : America

Distribution : America; India : Kanpur

Host : Chilomenes sexmaculatus Fabricius

Homalotylus nigritus (Agarwal)

(Fig. 201)

1970 *Neoaenasioidea nigritus,* Agarwal, *Mushi,* 44 : 27.
1975 *Homalotylus nigritus,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 65.

N. nigritus resembles *N. indica* Agarwal and *N. albiclavatus* in wing pattern, but is differentiated in the following :

Female : Length 2.03 mm. Body black; scape, pedicel and funicle dark brown to black, club white; fore and hind legs uniformly black, middle legs black with tibial spur and 1-4 tarsal segments white; antennal segments subquadrate; scape a little less than 8 times longer than thick; vein *st* less than 2 times vein *pm;* middle tibial spur slightly longer than metatarsus; tip of tibiae, metatarsus and

tarsal segments 2-4 with 9, 22, 7, 7 and one pegs respectively; ovipositor about 0.33 of abdomen; third valvulae very short, conical.

Type locality : India

Distribution : India : Hoshiarpur, Phillaur, Patiala, Hissar, Aligarh.

Hosts : Coccinellid beetles attacking *Centrococcus, Nipaecoccus, Pseudococcus* spp. on *Citrus medica* L.

Homalotylus ferrierei Hayat, Alam & Agarwal

1975 *Homalotylus ferrierei,* Hayat, *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 67.

Female : Length 1.72 mm. Frontovertex metallic-bluish-green with a golden tinge, finely punctate; occiput fuscous, face below lower orbital border orange; scape orange-yellow, pedicel, funicular segments 1-2 and base of third segment brown, segments 4-6 and club white; mesoscutum shining brown; pronotum dusky yellow; axilla and scutellum fuscous; metanotum and propodeum dusky, pleurae orange-yellow; legs orange-yellow, except hind tibiae and apex of hind femora brownish; abdomen above laterally and apical sternites dark brown, shining; tip of ovipositor brownish.

Head with dorsum 1.50 times wider than long; frontovertex less than 0.20 of head width; front ocellar space more than ocellocular space; pedicel as long as the following 2 funicular segments combined; first 4 segments slightly longer than thick, fifth quadrate, sixth slightly thicker than long; club as long as preceding 3.50 funicular segments combined.

Fore wings length width ratio 8 : 3; with a central infuscation, without subapical oval hyaline spot; costal cell obsolete; vein *st* subparallel to anterior margin; middle tibial spur slightly longer than metatarsus.

Ovipositor about 0.33 of abdomen.

Type locality : Nasik.

Host : Coccinellid on *Cerococcus sp.* on *Hibiscus sp.*

Homalotylus albiclavatus (Agarwal)

1970 *Neoaenasioidea albiclavatus,* Agarwal, *Mushi,* 44 : 27.

1975 *Homalotylus albiclavatus,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 69.

This species differs from *H. indicus* Agarwal in the following :

Female : Length 2.00 mm. Scape light brown, pedicel and 1-5 funicular segments brown, sixth funicular segment and club white;

scape more than 9 times longer than thick, first funicular segment 1.50 times longer than thick, sixth segment as long as thick.

Vein *pm* more than 0.50 of *st;* fore coxae, trochanter and femora light-brown, tibiae and tarsi brown; middle coxae, trochanters, tip of femora and tibiae except tip and first tarsal segment light brown, rest white; tibial spur longer than metatarsus; tip of tibiae, metatarsus, second, third and fourth tarsal segments with 7, 20, 9, 7 and one pegs respectively; hind coxae, trochanters, femora light brown, tibiae and pretarsus brownish; metatarsus and 2-4 tarsal segments whitish.

Type locality : Shencottah Gap (Western Ghats) India

Distribution : India : Shoranur, Jogindernagar, Lakhimpur Kheri.

Hosts : Coccinellid larvae attacking *Nipaecoccus vastator* and *Centrococcus insolitus.*

Homalotylus indicus (Agarwal)

1966 *Neoaenasioidea indica,* Agarwal, *Proc. Indian Acad. Sci.,* (B) 63 : 73.

1975 *Homalotylus indicus,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 65.

Female : Length 1.93 mm. Head yellowish-orange; scutum slightly metallic; wings hyaline; fore legs almost pale white, with yellowish-orange tibiae; middle coxae, trochanters, apex of femora and basal 0.50 of tibiae light brown; femora, apex of tibia and tarsal segments brown to whitish; hind legs almost whitish with the apical and upper 0.50 of femora; abdomen faintly metallic, orange at the base, violet in the middle, yellowish at apex.

Vertex rounded; ocellar triangle acute-angled; antennal sockets reaching facial margin; scrobes shallow and narrow, convergent; mandibles tridentate with the middle tooth longest; maxillary palpi with 4 and labial palpi with 3 segments; funicular segments subquadrate, slightly longer than thick; club obliquely rounded apically, about 3 times longer than thick, longer than the preceding 3 segments combined; first funicular to the third club segment with 3, 4, 4, 5, 5, 6, 6 and 6 sensoria, respectively.

Axillae broadly contiguous; scutellum almost as wide as long; mesopostphragma acute at apex; fore wings 2.50 times longer than wide; fringe short; costal cell obsolete; coxal apex with 4 setae; tip of tibiae, metatarsus, second, third and fourth tarsal segments with 8, 22 (in two rows) 9, 8 and 3 pegs respectively; tibial spur longer than metatarsus; tibiae and 4-5 tarsal segments testaceous.

Abdomen as long as thorax; truncated at apex; valvulae long and narrow, movably articulated with the second valvifers.

Type locality : India

Distribution : India : Aligarh

Hosts : Coccinellids predaceous on *Rastrococcus iceryoides* (Green) on *Capparis.*

Litomastix Thomson

1876 *Litomastix,* Thomson, *Skand. Hym.,* 4 : 171.
1898 *Berecyntus,* Howard, *Proc. US nat. Mus.,* 21 : 238.
1904 *Litomastix,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 299.
1904 *Berecyntus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 299.
1909 *Litomastix,* Schmiedeknecht, *Gen. Ins.,* 97 : 225.
1909 *Berecyntus,* Schmiedeknecht, *Gen. Ins.,* 97 : 226.
1915 *Litomastix,* Girault, *Mem. Queensland Mus.,* 4 : 125.
1916 *Paracopidosomopsis,* Girault, *Psyche,* 23 : 49.
1921 *Litomastix,* Mercet, *Fauna Iberica,* 441.
1921 *Litomastiellus,* Mercet, *Fauna Iberica,* 443.
1928 *Litomastix,* Ishii, *Bull. Imp. Agric. Exp. Sta.,* 3 : 103.
1938 *Paracopidosomopsis,* Mani, *Cat. Indian Ins.,* 23 : 88.
1946 *Berecyntiscus,* Ghesquiere, *Rev. Zool. Bot. Afr.,* 39 : 368.
1952 *Litomastix,* Nikolskaya, *Dobl. Akad. Nauk SSSR. Chalcid.,* 336, 412.
1953 *Litomastix,* Ferrière, *Mitt. Schweiz. Ent. Ges.,* 26 : 29.
1955 *Litomastix,* Erdös *et* Novicky, *Beitr. Z. Ent.,* 5 : 179, 189.
1963 *Litomastix,* De Santis, *Ann. Com. Invest. Cient. Buenos Aires,* 4 : 282.

Female : Head as wide as thorax, occiput excavate, acutely margined; head in front subtriangular, a little longer than wide; scrobes deep; eyes moderately large or minute, hairy; ocellar triangle obtuse; ocellocular space equal to ocelloccipital space; mandible tridentate, maxillary palpi with 4 and labial palpi with 3 segments, antennae inserted near mouth; scape cylindrical, pedicel longer than following segments; funicle with 6 segments gradually becoming thicker; club stout; entire, or with 3 segments. Thorax reticulate-squamous or punctate; scutum entire, axillae contiguous, fore wings hyaline or weakly infumate; vein *m* punctiform; *pm* subequal, *st* longer, speculum obscure; abdomen depressed.

Male like female, but antennae more hairy; club entire, ovate or lanceolate.

Type-species : Litomastix chalconotus (Dalman)

Litomastix daccaensis Mani

1941 *Litomastix daccaensis,* Mani, *Indian J. Ent.,* 3 (1) : 28.

Female : Length 0.80-0.90 mm. Body generally black; dark green, with dark coppery reflections on mesoscutum and scutellum;

head brownish-black, finely shagreened; viewed in front pubescence brown; antennae very dark brown; thorax shagreened, with dark metallic sheen on mesoscutum, coppery sheen on scutellum; fore femora dark brown; middle and hind femora brownish-black; tibiae brown, with dense white pubescence, tarsi brown.

Head viewed above as thick as its median length, somewhat wider than thorax, occipital margin acute; interocellar space about 3 times ocellocular; antennae shorter than body, with dense gray pubescence; scape equal to funicle; pedicel about 0.50 of scape; funicular segments subequal; club solid, nearly equal to 5 funicular segments combined, broadly and obliquely truncate apically.

Fore wings with vein *m* subequal to *st;* vein *pm* somewhat shorter than *m*; hid metatarsus somewhat shorter than the following 2 segments combined.

Abdomen subequal to thorax.

Type locality : Dacca

Litomastix javae (Girault)

1916 *Paracopidosomopsis javae,* Girault, *Psyche,* 23 : 49.
1920 *Paracopidosomopsis javae,* Gahan, *Proc. US nat. Mus.,* 56 : 522.
1938 *Paracopidosomopsis javae,* Mani, *Cat. Indian Ins.,* 23 : 88.
1940 *Paracopidosomopsis javae,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 14.

Gahan ascribes to this species specimens reared from *Plusia signata* in Coimbatore (South India); originally the species comes from Java. I have no specimens of this species.

Type locality : Java

Distribution : Java; South India

Host : Plusia signata

Mashhoodiella Hayat

1972 *Mashhoodiella,* Hayat, *Acta ent. Bohemoslov.,* 69 : 209.

Female Body finely reticulate; eyes glabrous; scutellum with brown setae, rest of body with white setae.

Head thick frontoccipitally; eye dorsally as wide as frontovertex; occipital margin acute; gena as long as wide; mandibles with 3 acute teeth; scape long and slender; pedicel longer than first funicular segment; funicular segments 1-5 longer than thick; segment 6 times as long as thick; club-3-segmented, obliquely truncate apically; mesoscutum without parapsidal sutures; axillae broadly meeting; scutellum wider than long, broadly rounded apically; fore wings with

a central infuscated patch; vein *m* about 2 times as long as thick; *pm* short; *st* equal to *m;* marginal fringe short; legs long, slender as in *Homalotylus;* abdomen as long as thorax, suboval; cercal plates situated at about middle of abodmen; subgenital plate of uniform width, posterior margin with a small notch in the middle, sides of notch with knobs, mid longitudinal groove incomplete; ovipositor not exserted.

Type-species : Mashhoodiella echthromorpha Hayat

This genus is closely related to the *Homalotylus* Mayr and *Isodromus* Howard.

Mashhoodiella echthromorpha Hayat

1972 *Mashhoodiella echthromorpha,* Hayat, *Acta ent. bohemoslov.,* 69 : 210.

Female : Length 1.44 mm. Head yellow, face and gena paler, occiput faintly brown; distal 0.50 of radicle, narrow strip above apex of scape, a similar but smaller strip below on scape apically, pedicel above narrowly, funicular segments 1-3 surfaces and segment 4 below brown; rest of antennal segments whitish-yellow; thorax pale yellow, sutures, margin of scutellum and mesopleura red; fore wings with a central large infuscated patch, basal 0.33 of hyaline area with transparent cilia; infuscated area extends upto 0.66 of the width of disc in the middle, posterior 0.33 of hyaline but appears infuscate due to presence of long brown cilia; anterior to this infuscation and the rest of disc distad of the infuscated area hyaline and bearing short brown cilia; legs yellow, with a brown patch at distal 0.50 of femora and distal 0.50 of tibia of hind legs; abdomen basal 0.50 of white; apical 0.50 of fifth tergum to apex, hind margin of subgenital plate brown.

Frontovertex less than 0.33 of head width, nearly 2.50 times longer than wide; ocellar triangle equilateral; ocellocular and coelloccipital space 2 times ocellar diameter; eyes 2 times longer than width of frontovertex; occiput concave, upper margin acute; head in profile with frontovertex convex imperceptibly merging with face; gena as long as eye width; antennal sockets situated a little above facial margin; scrobes short, shallow; scape slender, 8 times longer than thick; pedicel slightly more than 2 times longer than thick, longer than first, funicular segments 1-5 longer than thick, segment 6 as long as thick; club obliquely truncated, more than 3 times longer than thick, longer than preceding 3 funicular segments combined.

Pronotum anteriorly, metanotum and propodeum laterally fuscous; mesoscutum longer than scutellum; axillae broadly united; scutellum wider than long, sparsely setose, with 2 long setae at apex; mesopostphragma short; costal cell broad; vein *pm* short, about 0.33 of *m; st* as long as *m;* marginal fringe short; middle tibial spur longer than metatarsus; tip of tibia and tarsal segments 1-4 with 7, 14,6,4, and 3 pegs respectively.

Ovipositor concealed.

Male : Not known.

Type locality : India : Uttar Pradesh, Aligarh

Host : Ceroplastes.

Pentalitomastix Eady

1960 *Pseudolitomastix,* Eady, *Bull. ent. Res.,* 50 : 667.
1960 *Pentalitomastix,* Eady, *Bull. ent. Res.,* 51 : 173.
1960 *Pentalitomastix,* Hoffer, *Acta Faun. ent. Mus. Nat. Pragae,* 6 : 93-119.
1971 *Pentalitomastix,* Subba Rao, *J. Nat. Hist.,* 5 : 222.

Cheeks longer than the height of an eye; mandibles tridentate, middle tooth slightly longer than outer teeth; head, mesoscutum and scutellum with shining reticulate sculpture; vein *m* punctiform; scape normal, slightly flattened; female with funicle 5-segmented and club obliquely truncate; funicle not expanded; male with funicle 6-segmented, club apically acute; antennae with or without triarticulate club, one annellus; occipital margin raised; gena long. Hoffer refers the genus to the tribe Copidosomini. Polyembryony is known in *P. plethoricus* Calt. from Mexico.

Type-species Pentalitomastix nacoleiae (Eady)

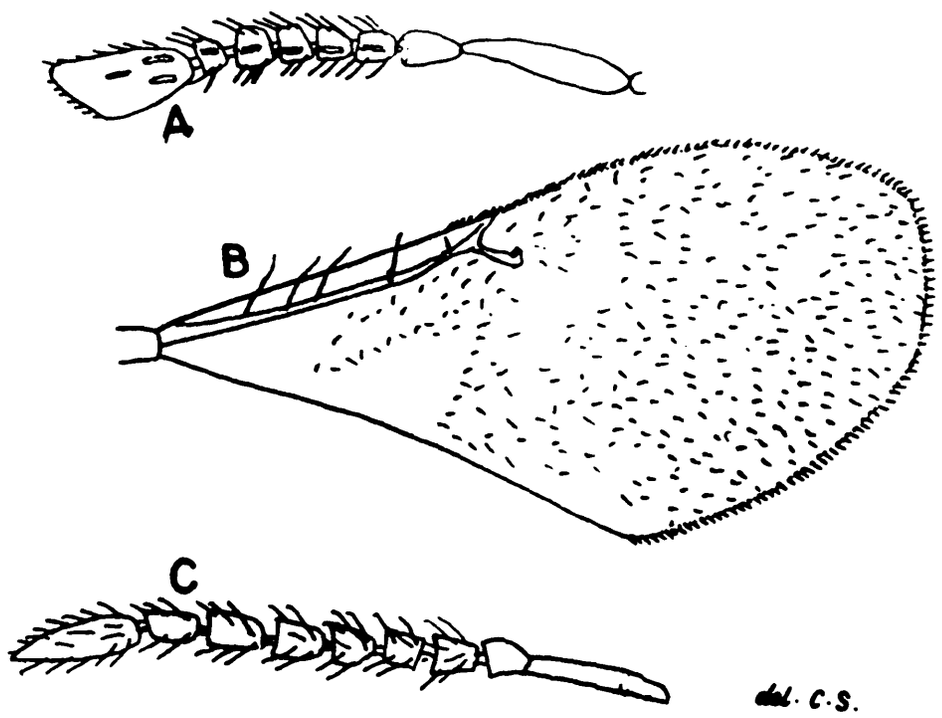

FIG. 203. *Pentalitomastix nacoleiae* (Eady) : A. Antenna, female; B. Fore wing, female; C. Antenna, male.

Pentalitomastix nacoleiae (Eady)

(Fig. 203)

1960 *Pseudolitomastix nacoleiae,* Eady, *Bull. ent. Res.*, 50 : 667 (preoccupied in Risbec.)

1960 *Pentalitomastix nacoleiae,* Eady, *Bull. ent. Res.*, 51 : 173.

1971 *Pentalitomastix nacoleiae,* Subba Rao, *J. nat. Hist.*, 5 : 222.

Female : Length 0.70 mm. Head, scutum, mesopleura and scutellum reticulate, scutellum rather less strongly sculptured; head and scutum green, former with purplish reflections; scutellum purple with green apex; mesopleura dark violet; abdomen metallic-fuscous-green; scape yellow, flagellum brown; fore femora, middle femora and proximal 0.66 of hind tibiae, and apices of tarsi brown, rest of legs yellow, tarsi a little paler.

Ocellar triangle right-angled triangle; eyes sparsely pubescent; cheeks clearly longer than eye; antennae clavate; funicle with 5 segments; scape slightly longer than club, about equal to 4 segments of funicle; pedicel with 1.50 times longer than thick, first segment of funicle clearly longer than thick, remainder quadrate.

Mandibles tridentate, middle tooth slightly longer than the others; fore wing without pubescence basally, except for a few larger setae; vein *m* punctiform; *pm* very short, not longer than *m* and indistinct; vein *st* a little longer than *m* and *pm* together, but very indistinct; *m, pm* and base of *st* covered by a pale fuscous spot; middle tibial spur equal to first 2 tarsal segments combined; metatarsus slightly shorter than second and third segments combined.

Male : Body darker; antennae yellowish-brown, filiform, funicle with 6 segments, at least distal segments a little longer than thick, with long hairs which are as long as width of segment or longer; scape longer than club, about equal to proximal 3 segments of funicle combined; pedicel short, shorter than segments of funicle, and only slightly longer than thick; femora and hind tibiae brown; fore and middle tibiae tinged with brown in middle.

Type locality : New Guinea

Distribution : Malaya; India : Shillong

Hosts : Margaronia marginata Hempar; *Nacoleia octasema* in New Guinea.

5. Bothriothorax — Group of Genera

Aminellus Masi

1919 *Aminellus,* Masi, *Ann. Mus. Civ. Stor. Nat. Genova,* (3) 8 : 286.

1921 *Aminellus,* Mercet, *Fauna Iberica,* 589.

1975 *Aminellus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 24.

Female Head lenticular, with large deep punctae on vertex, frons and clypeus; occipital border acute; ocellar triangle acute-angled; eyes large, hispid; mandible elongate at base and tip with 2 acute teeth and one inner truncation; maxillary palpi with 4 and labial palpi with 3 segments; antennae inserted close to the mouth, with 11 segments : 1.1.6.3; scape long; pedicel much longer than thick; club a little larger than funicle, obliquely truncate at apex.

Scutum large, convex, rugoso-punctate; without a trace of parapsidal furrow; axillae separate; scutellum highly convex, subtriangular, with one tuft of setae apically; fore wings large, with complete speculum; vein *m* absent; vein *st* issuing from *sm; pm* shorter than *st;* marginal fringe short; middle tibial spur equal to metatarsus; hind tibial spur double.

Abdomen wide, triangular, shorter than thorax; terminal tergite strongly retracted; ovipositor concealed or exserted.

Male : Eyes small; antennae slender, inserted on level of lower orbital border; scape short, equal to pedicel; funicle fusiform, densely hairy, but with short hairs; segments well separated; sixth segment longer than others; club entire, lanceolate, not thicker than funicle; punctation on thorax not as deep as in female; scutellum with apical tuft; abdomen truncate apically.

Type-species : Aminellus niger Masi

Aminellus indicus Kerrich

(Fig. 204)

1963 *Aminellus indicus,* Kerrich, *Beitr. Ent.,* 13 : 362.

1975 *Aminellus indicus,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 24.

Female : Head and body colour as in *A. niger* Masi; antennae more or less dark testaceous, darker on club; leg brownish-black; femora broadly at tip; tibiae and tarsi testaceous; middle and hind tarsi basally and middle tibiae apically pale testaceous; middle tibia densely darker and hind tibia slightly darker basally.

Head above length to width 1 : 2.1; frontovertex 0.33 of width; ocellar triangle right-angled; coarsely punctate above scrobe; frontovertex reticulately shallowly punctate; mesoscutum and scutellum coarsely reticulate.

Type locality : Mysore

Distribution : Shahjahanpur, Mysore

Hosts : Rastrococcus iceryoides, Pseudococcus sp., *Cryptolaenus montrouzieri, Scymnus* sp.

Anabrolepis Timberlake

1920 *Anabrolepis,* Timberlake, *Proc. Hawaii. ent. Soc.,* 4 (2) : 431-432.
1928 *Anabrolepis,* Ishii, *Bull. Imp. Agr. Sta. Japan,* 3 (2) : 148-149.
1956 *Anabrolepis,* Tachikawa, *Insecta Matsumurana,* 20 (3-4) : 94.
1960 *Anabrolepsis,* Hoffer, *Acta Faun. Ent. Mus. Nat. Pragae,* 6 : 114.
1979 *Anabrolepis,* Krombein *et al.,* Hymen. N. America, 1 : 943.

Type-species : Anabrolepis extranea Timberlake

Anabrolepis bifasciata Ishii

(Fig. 204)

1923 *Anabrolepis bifasciata,* Ishii, *Bull. Dept. Agric. & Comm. Plant quar. Sta.,* 3 : 106.
1960 *Adelencyrtus bifasciatus,* Compere & Annecke, *J. ent. Soc. S. Africa,* 23 : 375-389.
1967 *Anabrolepis bifasciata,* Subba Rao, *Bull. ent.,* 8 (1) : 7.

Type locality : Japan

Distribution : Japan, India : Patna

Host : Aonidiella aurantii (Mask.)

Anabrolepis mayurai Subba Rao

(Fig. 204)

1957 *Anabrolepis mayurai,* Subba Rao, *Proc. Indian Acad. Sci.,* 46 (6) : 380.

Female : Length 1.25-1.75 mm. Ocelli reddish-brown; eyes brick red; antennae yellowish-brown; scape pale brown; brilliant metallic-blue-green, with red iridescence on thorax and vertex; entire thorax brilliant metallic-bluish-green; metanotum and propodeum black, shining, shagreened; coxae black; trochanter pale yellow; fore and hind femora dark brown with bases pale yellow; fore and hind tibiae dark brown with their apices pale yellow; middle femur pale yellow; tibia yellowish-white; tarsus pale yellow; abdomen dark brown to black, shiny; mesonotum with short silvery-white pubescence; wings fuscous with several rays along the margin alternating with hyaline spots.

Head as broad as thorax; frons and vertex narrow, closely finely punctate; bare; ocellar triangle acute; ocellocular space very narrow, lateral ocelli very close to the orbits; front ocellar space more than interocellar space; interorbital space slightly less than 0.33 of the width of head; eyes microscopically thinly pubescent; gena prominent; viewed in front the lower borders of the orbits not parallel; antennae inserted slightly below the middle of face, just above the level of lower orbital borders; scrobe short, semi-circular; antenna with 11 segments; scape slightly dilated, more than 3 times

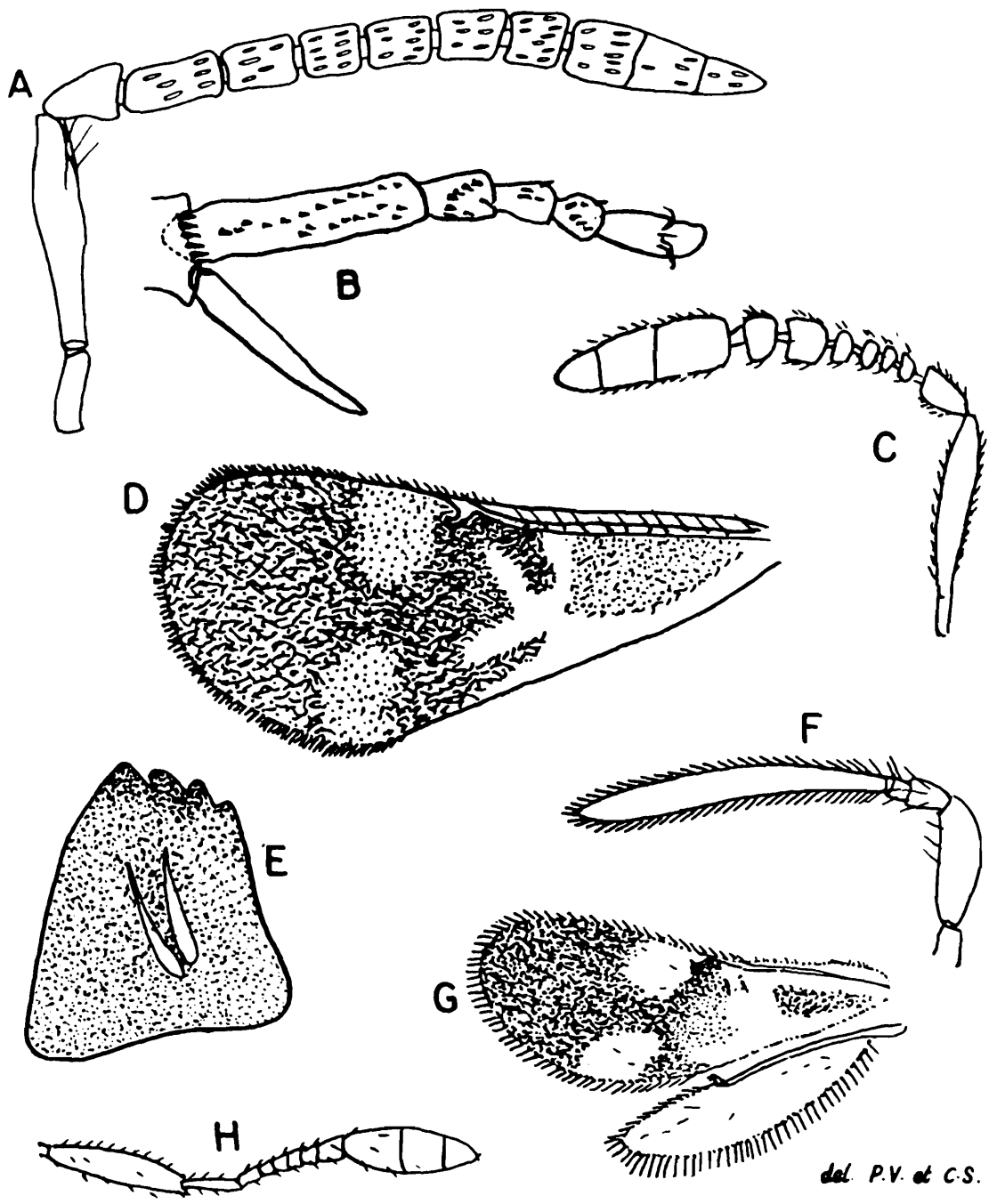

FIG. 204. A-B. *Aminellus indicus* Kerrich, female : A. Antenna; B. Middle leg; C-E. *Anabrolepis bifasciata* Ishii, female : C. Antenna; D. Fore wing; E. Mandible; F-H. *Anabrolepis mayurai* Subba Rao; F. Antenna, male; G. Fore and hind wings; H. Antenna, female.

pedicel; funicle with 6 segments, thicker than long, but segments increase in length apically; club 3-segmented, swollen, more or less fusiform; longer than funicle.

Mesonotum leathery-punctate; scutellum closely reticulately punctate; axillae connate; fore wings slightly more than 2 times longer than wide; vein *m* punctiform, longer than broad; vein *st* longer than *pm*.

Ovipositor exserted.

Male : Like female, differing as follows : Head and thorax dull metallic-green, with red iridescence; slightly smaller than female; antennae 5-segmented; scape, pedicel, 2-segmented funicle and a long undivided club; scape 2.50 times pedicel; club 5.50 times pedicel; funicular segments thicker than long; fore wing 2 times longer than broad; wings hyaline with an oblique speculum; abdomen dark brown, non-metallic.

Type locality : New Delhi

Distribution : New Delhi

Host : Aspidiotus glomeratus Green

Anicetus Howard

1896 *Anicetus,* Howard, *Proc. US nat. Mus.,* 18 : 639.
1898 *Asteropaeus,* Howard, *Proc. US nat. Mus.,* 21 : 231.
1904 *Anicetus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 305.
1904 *Asteropaeus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 305.
1909 *Anicetus,* Schmiedeknecht, *Gen. Ins.,* 97 : 257.
1915 *Habrolepoterygis,* Girault, *Mem. Queensland Mus.,* 37 (4) : 421.
1916 *Anicetus,* Girault, *Ann. ent. Soc. America,* 9 (3) : 302.
1925 *Anicetus,* Mercet, *Bull. R. ent. Egypt,* 50.
1935 *Krishnieriella,* Mani, *Rec. Indian Mus.,* 37 (4) : 421.
1938 *Krishnieriella,* Mani, *Cat. Indian Ins.,* 23 : 87.
1938 *Anicetus,* Mani, *Cat. Indian Ins.,* 23 : 95.
1963 *Anicetus,* De Santis, *Ann. Com. Invest. Cient. Buenos Aires,* 4 : 372.
1965 *Anicetus,* Subba Rao, *Proc. Roy. ent. Soc. London,* (B) 34 (5-6) : 71.
1965 *Anicetus,* Trjpitzin, *Ent. Rev.,* 44 (4) : 524.
1967 *Anicetus,* Annecke, *Trans. R. ent. Soc. London,* 119 (4) : 99-169.
1976 *Anicetus,* Hayat, *Ent. monthly Mag.,* 111 (1328-1330) : 49.
1979 *Anicetus,* Krombein *et al.,* Hymen. N. America, 1 : 931.

Head as wide as thorax, viewed in front subtriangular, frontovertex wide; face deeply concave, with interantennal protuberance, eyes glabrous or hairy; ocellar triangle acute; mandibles with 2, 3 or 4 teeth or with one tooth and a truncation; maxillary palpi with 3 or 4 and labial palpi with 3 segments; antennae short, inserted equidistant between mouth and level of lower orbital border, strongly compressed; scape expanded, subtrapezoid; pedicel subconic; funicular segments 6 short; markedly transverse, club longer than funicle, obliquely truncate apically; eyes hairy; wings brown; tip hyaline; veins *st* and *pm* rather short; vein *m* somewhat longer.

Mesonotum entire; axillae contiguous or also separate; scutellum wide, convex, rounded apically; propodeum well developed; fore wings wide, irregularly infumate; vein *m* as long as thick; veins *pm* and *st* subequal; speculum obscurely indicated.

Abdomen oval, pointed apically, equal to head and thorax combined.

Male : Very different from female; body dark, with metallic reflections; antennae long, filiform; scape fusiform, funicular segments subcylindrical, longer than thick with long verticillate hairs, club entire, subequal to the preceding 2 segments combined.

Type-species : Anicetus ceylonensis Howard

KEY TO SPECIES

1.	Ovipositor longer than abdomen	*A. stylatus* Subba Rao
	Ovipositor shorter than abdomen	2
2.	Ovipositor about 0.50 of abdomen; vein *m* longer than *st*	*A. dodonia* Ferrière
	Ovipositor hardly 0.33 of abdomen; vein *m* at the most equal to *st*	3
3.	Head less than 2 times as wide as long	*A. ceylonensis* Howard
	Head more than 2 times as wide as long	4
4.	Head 5 times or more as wide as long	6
	Head about 3-4 times wider than long	5
5.	Head 3 times wider than long; mandibles with 3 short, obtuse teeth; first funicular segment shorter than second; club with 3 segments	*A. ashmeadi* Hayat *et al.*
	Head 4 times wider than long; first funicular segment not shorter than second; club biarticulate	*A. communis* Ann.
6.	Truncated tip of club subequal to funicle	7
	Truncated tip of club longer than funicle	11
7.	Third club segment narrow laterally, less than 0.50 of the second segment.	8
	Third club segment about 0.50 of the second segment laterally.	9
8.	Ovipositor about 0.33 of abdomen.	*A. ceroplastodis* (Mani)
	Ovipositor hardly exserted.	*A. orientalis* Agarwal
9.	Ocellocular space 0.50 of ocellar diameter	*A. aligarhensis* Hayat, Alam & Agarwal
	Lateral ocelli contiguous with eye.	10
10.	Scape longer than funicle	*A. yasumatsui* Subba Rao
	Scape subequal to pedicel and funicle combined	*A. brevicaudatus* Subba Rao
11.	Speculum bordered proximally by 2 rows of setae; club sutures distinct	*A. beneficiens* Ishii & Yasumatsu
	Speculum bordered proximally by a single row of setae; club sutures obsolete basally	12
12.	Scutellum with 20 setae	*A. howardi* Hayat *et al.*
	Scutellum with 24 setae	*A. angustus* Hayat *et al.*

Anicetus stylatus Subba Rao

(Fig. 205)

1977 *Anicetus stylatus,* Subba Rao, *Proc. Indian Acad. Sci.,* (B) 85 (1) : 16.

Female : Length 2.25-2.30 mm. Body generally yellowish-brown, with dark brown and orange; frontovertex orange, with strong purple metallic reflections on the frontal edge; face with a dark brown band between antennal sockets across interscrobal prominence extending back on each side of cheeks; face straw-coloured; eyes black; ocelli brown; scape below narrowly dark brown; second and third club segments dark brown, rest of antenna yellowish-brown; thorax entirely dark orange-brown, except metanotum and propodeum which are dark brown; abdomen dark brown in the basal 0.50; ovipositor orange except for the dark brown tip; legs concolorous with body except hind tibiae which have a pair of dark brown rings.

Eyes large, nearly touching the fronto-facial carina, head a little over 6 times as wide as frontovertex; ocellar triangle acute-angled; lateral ocelli almost touching eyes; club longer than funicle, clearly 3-segmented; rhinaria present on funicular segments 3-6 and on all club segments, apical segment with a row of small rhinaria dorsoventrally; antenna densely setose.

Thorax as in *A. dodonia* Ferrière; middle tibial spur 0.50 of metatarsus; vein *sm* slender; *m, pm* and *st* subequal; vein *st* only just longer than *pm*; basal triangle of fore wing with a row of setae almost parallel to vein *sm* and hind border; discal setae beyond venation fine, marginal cilia short; fore wings with patches of infumation.

Abdomen cordate, pointed apically; cercal plates nearer the base of abdomen; ovipositor longer than abdomen.

Male : Not known.

Type locality : Mysore

Distribution : India; Karnataka State, Mysore

Host : Ceroplastes sp. on *Ficus* sp.

This species belongs to *ceroplastidis* (Mani) group that includes *A. dodonia* Ferrière, *A. beneficiens* Ishii and Yasumatsu, *A. ohgushi* Tachikawa, *A. communis* Annecke and *A. aligarhensis* Hayat *et al.*, *A. angustus* Hayat *et al.*, and *A. howardi* Hayat *et al.*

This species differs from all other known species of *ceroplastis*-group in unusually long ovipositor, which is longer than abdomen.

Anicetus dodonia Ferrière

1935 *Anicetus dodonia,* Ferrière, *Bull. ent. Res.,* 26 : 401.

1965 *Anicetus dodonia,* Subba Rao, *Proc. R. ent. Soc. London,* (B) 34 : 71.

1967 *Anicetus dodonia,* Annecke, *Trans. R. ent. Soc. London,* 119 (4) : 120.

1975 *Anicetus dodonia,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 31.

Female : Length 1.30-1.80 mm. Body orange-yellow; face yellow, with 2 black lines from the middle of cheeks and meeting between antennae orange-yellow, with a black line on the lower margin of scape, club brown; legs yellow, middle and hind tibiae each with 2 brown rings, lower 0.66 of hind metatarsi also brownish; abdomen brown at base.

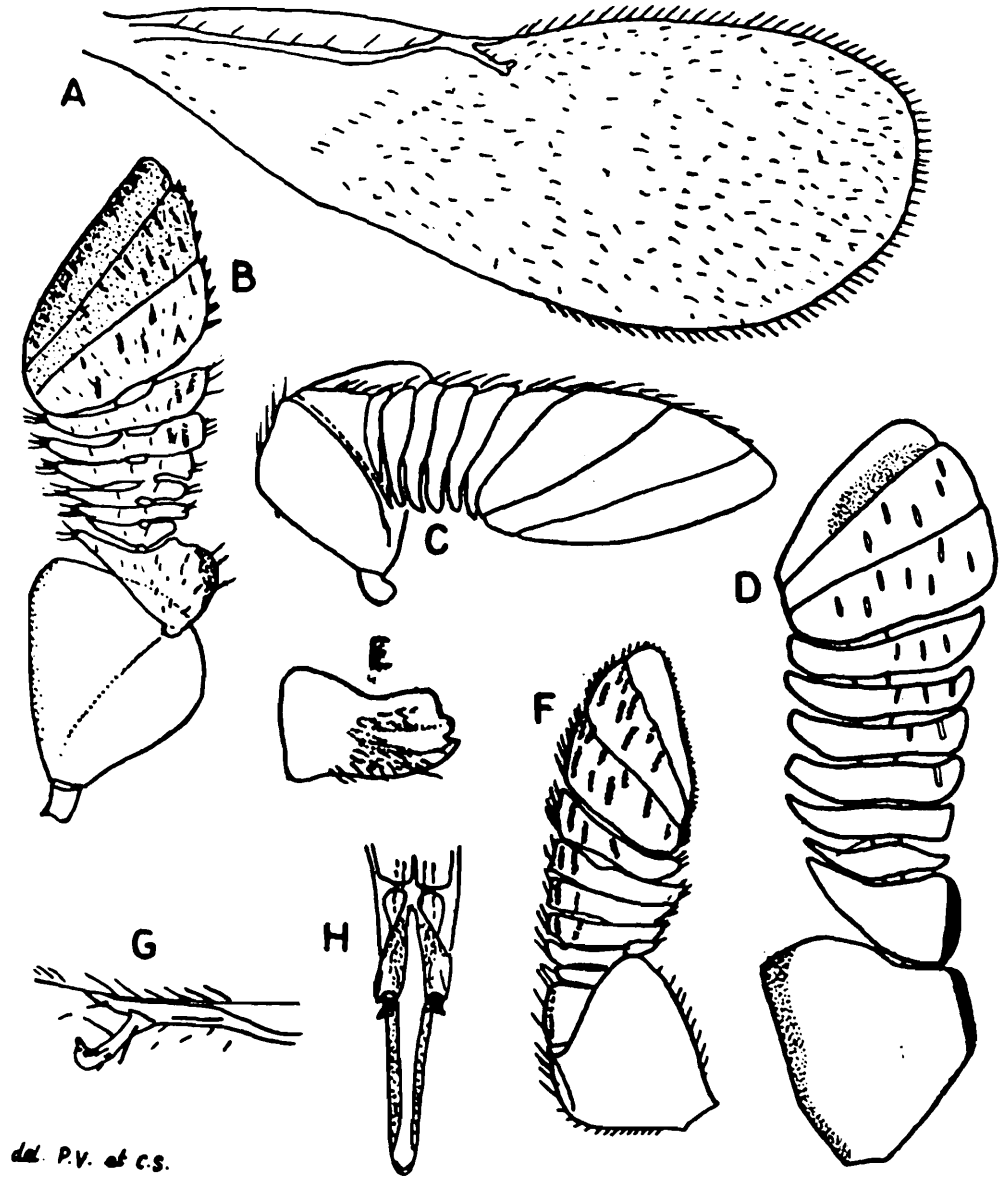

FIG. 205. A-B. *Anicetus stylatus* Subba Rao, female : A. Fore wing; B. Antenna; C-H. *Anicetus dodonia* Ferrière, female : C. Antenna side view; D. Antenna; E. Mandible; F. Antenna; G. Stigmal venation; H. Genitalia.

Head transverse, oval, eyes large; ocellar triangle regular; lateral ocelli near eye; frontovertex as broad as 0.40 of its length; frons prominent, angulated, face much reflexed; mandibles with 3 teeth, upper a little longer than lower; antennae inserted on the sides of the face, very broad and flattened; scape triangular, as long as thick; pedicel small, elongate on one side, below; 6 funicular segments short and transverse, about 5 times as thick as long; club with 3 segments obliquely truncate, equal to funicle and pedicel combined.

Throax finely shagreened, almost smooth, shining; mesonotum a little broader than long, with small sparse black ciliae; scutellum triangular, with small ciliae at base and 4 longer black hairs in pairs before the tip; wings slightly infumate with base and tip hyaline and a stronger infuscated band forming a 0.50 of circle beyond the veins across the wing just before the hyaline tip; vein *m* very short, about 2 times as long as broad; vein *st* not longer than *m,* a little longer than *pm;* base of wing glabrous, below the end of vein *sm* and before the oblique hairless line, ciliation relatively long but sparse; beyond this line ciliation denser, somewhat longer and more black below veins; *m* and *st* than in the middle of wing; middle tarsi short, metatarsus equal to the following 4 segments combined; middle tibial spur equal to metatarsus.

Abdomen a little shorter than thorax, narrowed behind; ovipositor slightly longer than 0.50 of abdomen.

Type locality : Bangalore, India

Distribution : India : Aligarh, Delhi

Hosts : Pulvinaria maxima Green, *Ceroplastes* sp. on *Psidium guava; Tachardia lacca* (Kerr.).

Ferrière's description, although clear enough to separate *A. dodonia* from other species of genus, may be supplemented by the following additional characters : In the original description, mandibles stated to be 2-dentate, but in fact mandibles are 3-dentate; the middle tibia without 2 black rings, and the lower 0.67 of hind metatarsus without any dark coloration.

Anicetus ceylonensis Howard

1896 *Anicetus ceylonensis,* Howard, *Proc. US nat. Mus.,* 18 : 369.
1919 *Anicetus ceylonensis,* Gahan, *Proc. US. nat. Mus.,* 56 : 522.
1938 *Anicetus ceylonensis,* Mani, *Cat. Indian Ins.,* 23 : 96.
1975 *Anicetus ceylonensis,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 30.
1975 *Anicetus ceylonensis,* Saraswat, *Mem. School Ent.,* 4 : 45.

Female : Length 2.00 mm. Body brownish-black, with some obscure metallic-green reflections; antennae dark brown; all legs dark brown, except the pale brown tip of fore femur and base of tibia,

tip of middle tibia and tarsi, hind tarsi except the apical segment; wings infumate; veins brown.

Head closely reticulately punctate, space between punctae finely rugulose; ocellocular space almost equal to ocellar diameter; front ocellar space about 3 times ocellar diameter; head from front length to width 78 : 100, mandibles tridentate; antennae with 9 segments : 1.1.6.1; scape about 0.73 of antenna and about 1.75 times as long as wide; pedicel about 0.20 of scape; funicular segments subequal but becoming gradually thicker apically; club about 0.33 of antenna and about 1.70 times as long as wide.

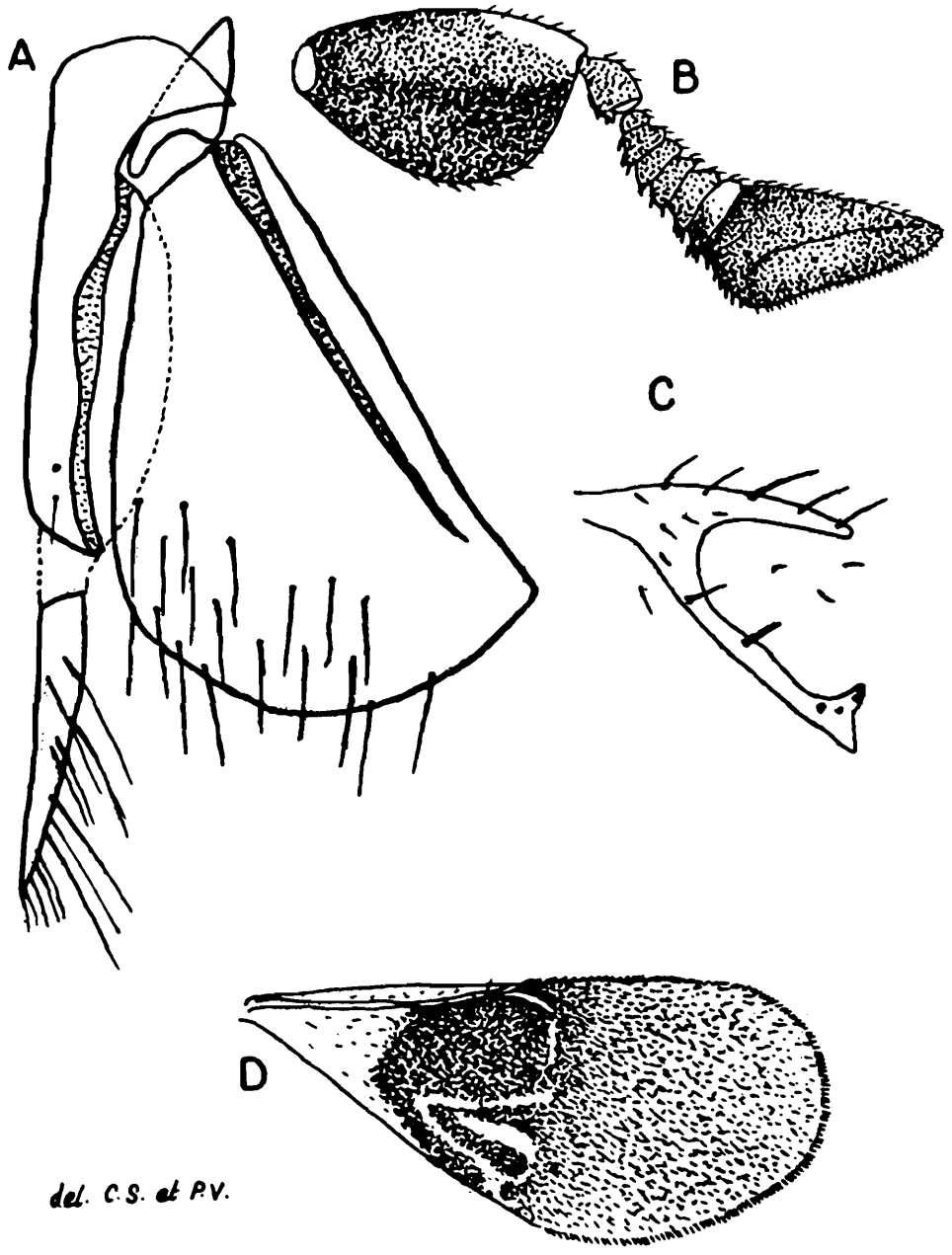

FIG. 206. *Anicetus ceylonensis* Howard, female : A. Genitalia; B. Antenna; C. Stigmal venation; D. Fore wing.

Thorax very finely reticulate; fore wing length to width 100 : 47; coxa about 1.54 times as long as thick; femur about 6.40 times longer than thick; tibia subequal to femur and about 8 times as long as thick, tibial spur almost equal to metatarsus; metatarsus nearly 0.32 of tibia, second tarsal segment distinctly shorter than metatarsus, third tarsal segment about 0.57 of the second, fourth segment subequal to the third, fifth segment about 2 times the fourth.

Abdomen about 0.40 of body; length to width in dorsum 100 : 90.

Type locality : Ceylon (Punduloya)

Distribution : Ceylon; India : Shencottah Gap (Western Ghats)

Hosts : Ceroplastes cajani Maskell, *Pulvinaria maxima* Green *Vinsonia stellifera* (Westw.), *Saissetia nigrum* (Nietn.).

Anicetus ceylonensis Howard, a parasite of *Vinsonia stellifera* in India and Ceylon, a related species of *Anicetus dodonia,* may be distinguished specially by the short ovipositor, which is "Just showing" and by the wings "nearly uniformly cloudly." It is dark honey-yellow, with faint purplish lustre on mesonotum, vertex and sides of the first abdominal segment.

Anicetus ashmeadi Hayat, Alam & Agarwal

(Fig. 207)

1975 *Anicetus ashmeadi,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 38.

Female : Length 1.24 mm. Body yellow; head yellowish, somewhat shiny below front ocellus; gena and face with a transverse fuscous band; antennae yellow testaceous, scape below and distal 2 club segments pale brown; thorax yellow, pronotum with a small pale brown patch in the middle; metanotum fuscous; fore wings infuscate with deeply infuscate semi-circular band distad of venation; legs yellow; femora pale; fore tibiae slightly fuscous on sides; hind tibiae with 2 fuscous incomplete bands, one at basal 0.33 and another in the middle; basal segment of abdomen metallic-greenish-violet, following 4 tergites fuscous laterally.

Head finely reticulate; eyes with minute hairs; dorsum about 1.60 times as wide as long; frontovertex nearly 0.25 of head width and 2.50 times as long as wide; ocellar triangle acute; ocellocular space equal to 0.50 of ocellar diameter; mandibles tridentate, teeth blunt; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape subtriangular; first funicular segment shortest, other segments gradually becoming thicker; club longer than pedicel and funicle combined.

Pronotum of almost uniform width; front margin deeply concave in the middle; hind margin convex, with a row of 18 setae;

mesoscutum finely reticulate, much wider than long; axillae appear separate; scutellum as long as mesosctum and clearly wider than long, apex broadly rounded, setae on dorsum pale, those at apex pale brown; fore wings nearly 2.50 times as long as wide; vein *m* and *st* subequal; vein *pm* shorter than either; proximal border of speculum with a single row of 4 coarse setae, basal triangle with about 25 setae; marginal fringe very short; hind wing 4 times as long as wide; marginal fringe 0.25 of disc width; middle tibial spur shorter than metatarsus; tip of tibia and tarsal segments 1-4 with 6, 8, 4 and 3 pegs respectively.

Abdomen distinctly triangular, shorter than thorax; cercal plates situated about middle of abodmen; second valvifers with a submarginal ridge; first valvifers triangular with articular knobs prominent; outer plates of ovipositor with a submarginal ridge along 0.75 of dorsal margin length; ovipositor concealed.

Type locality : Hissar

*Host : Ceroplastes sp.*on *Morus alba*

Anicetus ceroplastodis (Mani)

1935 *Krishnieriella ceroplastodis,* Mani, *Indian J. Ent.,* 37 : 422.
1938 *Krishnieriella ceroplastodis,* Mani, *Cat. Indian Ins.,* 23 : 87.
1940 *Krishnieriella ceroplastodis,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 14.
1951 *Anicetus ceroplastis,* Yasumatsu, *J. Fac. Agric. Kyushu Univ.,* 10 (1) : 3-5.
1953 *Anicetus ceroplastis,* Yasumatsu, *Sci. Bul. Fac. Agr. Kyushu Univ.,* 14 (1) : 17-26, 27-33.

Female : Length about 1.25 mm. Body generally yellowish to reddish-brown; no distinct sculpture on body, almost uniformly smooth; eyes black; antennae yellow except the outer margin of the foliaceous expansion of scape and apical 2 segments of club, which are dark greyish; thorax brownish-orange; legs yellowish-brown; hind tibia with a narrow dark greyish-brown band at basal 0.75; metatarsus pale brown apically; fore wings with vein *sm* diffusely pale brown.

Head above 0.67 as long as wide; height about 0.75 of width; ocellar triangle equilateral; front ocellus somewhat larger than lateral ocelli; ocellocular space less than ocellar diameter; mandibles tridentate, front tooth acute, second tooth rather blunt and the last broadly and roundly pointed; maxillary palpi with 4 segments; first segment with a length about 2 times its diameter; second segment somewhat shorter; third 0.50 of the first; fourth 2 times the first; somewhat attenuated beyond the basal 0.67, with long setae; labial palpi with subequal segments, which are somewhat stouter than those of maxillary palpi; antennae inserted close to the mouth border, apart from each other, interspace being about 2 times the distance from the cheek margins; length a little greater than the height of head;

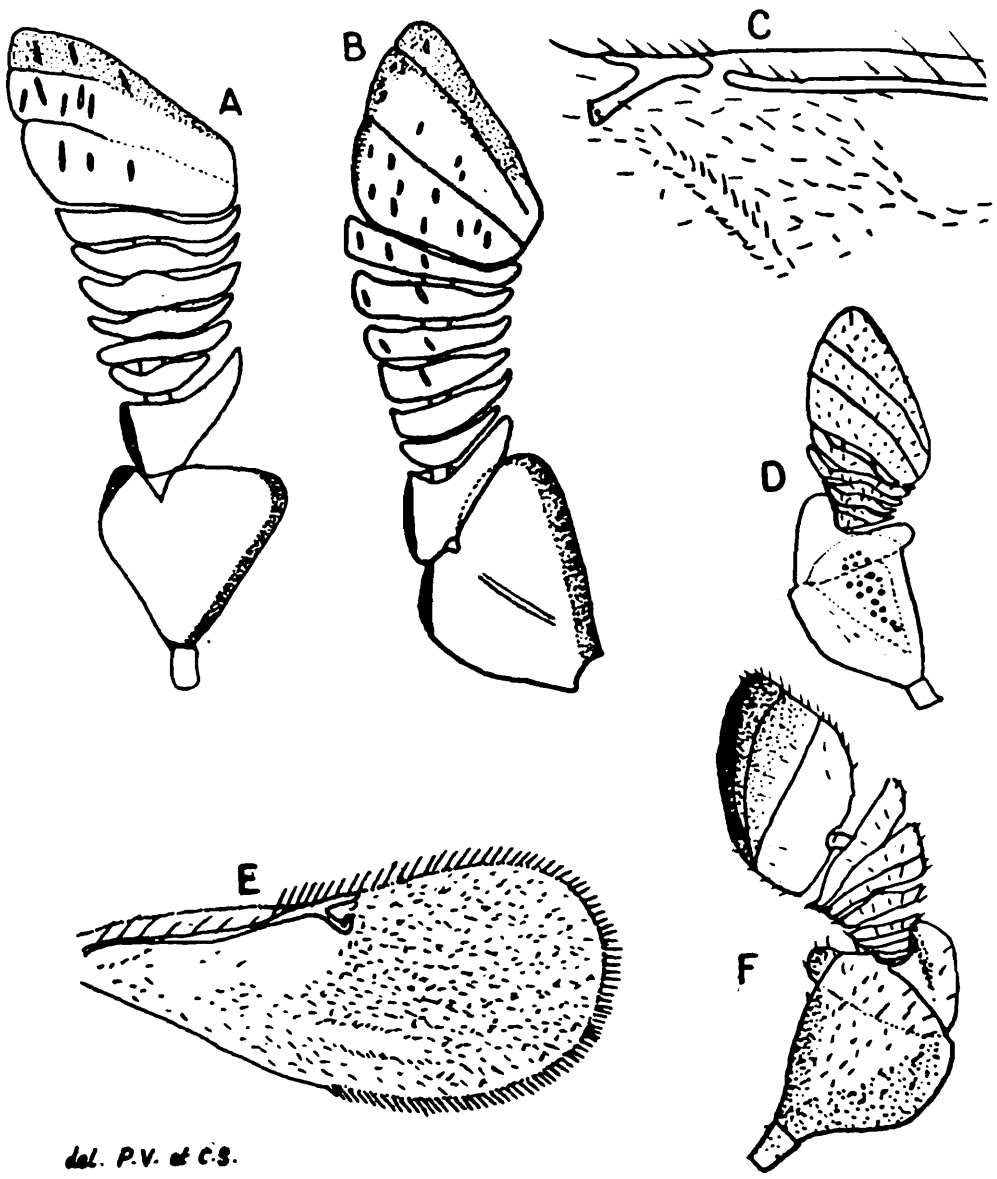

FIG. 207. A. *Anicetus ashmeadi* Hayat, Alam & Agarwal, female, antenna; B-C. *Anicetus aligarhensis* Hayat *et al.*, female : B. Antenna; C. Stigmal venation; D. *Anicetus orientalis* Agarwal, female, antenna; E-F. *Anicetus yasumatsui* Subba Rao, female : E. Fore wing; F. Antenna. *(Modified from different authors).*

scape laminately and subtriangularly expanded ventrally, with a length about 1.50 times the greatest width near apex; pedicel about 0.25 of scape, funicle roughly 0.75 of scape; first 4 segments roughly of equal thickness; fifth and sixth segments somewhat thicker; club about 0.25 of the funicle and pedicel; first segment longest, second a little shorter and third shortest, obliquely truncate at apex.

Thorax smooth and with numerous short, stiff setae; scutellum with a length about 0.75 of the greatest width anteriorly; fore wings

a little more than 2 times as long as wide; posterior angles rounded, with a clear colourless patch basally up to the basal 0.75 of vein *sm;* hind tibia somewhat broader band at basal 0.75.

Type locality : Coimbatore

Distribution : India, Japan

Hosts : Ceraplastes cajani, C. rubens, C. floridensis Comst. *C. pseudoceriferus* Gr., *C. japonicus* Gr

Anicetus orientalis Agarwal

(Fig. 207)

1965 *Anicetus orientalis,* Agarwal, *Acta Hymen.,* 2 (2) : 86.

A. orientalis resembles *A. beneficiens* Ishii *et* Yasumatsu but differs from it in the following manner :

Female : Length 1.34 mm. Gena and scrobes without black band; mandibles with 2 teeth and a truncature; hind tibiae without black patches; abdomen darker near base; pedicel dark brown near apex; club with first and second segments dark brown; frontovertex 2 times as long as wide; pedicel long, as wide as sixth funicular segment, both upper and lower margins laminate; ovipositor slightly exserted, equal to 0.11 of abdomen.

A. orientalis is very close to *A. ceroplastodis* (Mani) in having pedicel laminate on both margins, but can be distinguished in only slightly exserted ovipositor, whereas in *A. ceroplastodis* (Mani) it is exserted by a length equal to 0.50 of the length of abdomen.

Type locality : Aligarh

Host : Ceroplastes sp. on *Citrus aurantifolia*

Anicetus aligarhensis Hayat, Alam & Agarwal

(Fig. 207)

1975 *Anicetus aligarhensis,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.), 9 : 34.

Female : Length 1.63 mm. Differs from *A. ceroplastodis* as follows : Antennae yellow; scape pale brown below; pedicel basally above; basal 2 club segments above and almost whole of third segment dark fuscous; thorax yellow; pronotum with a brown patch in the middle; metanotum on sides and propodeum in middle pale brown; wings infuscate, with semi-circular band distad of veins; legs yellow with 2 incomplete bands on hind tibiae and discally on metatarsus; basal 3 tergites yellow, rest brown.

Head 2 times as wide as long; ocellar triangle acute; ocellocular space 0.50 of ocellar diameter; gena shorter than eye; mandibles with

3 acute teeth; third club segment more than 0.50 of second segment; scutellum as long as wide, broadly rounded apically, with about 32 setae; axillae almost contiguous; fore wings 2.33 times as long as wide; veins *m* and *st* subequal, vein *pm* shorter than either; speculum mesially bordered by 4 rows of coarse setae, with 4, 2, 4 and 4 setae in each row respectively; middle tibial spur subequal to metatarsus; tip of tibia and tarsal segments 1-4 with 9, 16, 5, 5 and 4 pegs respectively; abdomen shiny, a little shorter than thorax; cercal plates situated at about basal third of abdomen; ovipositor 0.20 of abdomen.

Type locality : Aligarh

Host : Ceroplastes sp. on *Mangifera indica*

Anicetus yasumatsui Subba Rao

(Fig. 207)

1965 *Anicetus yasumatsui,* Subba Rao, *Proc. R. ent. Soc. London,* 34 (5-6) : 73.

Female : Dull brown, except light yellow face and gena; club dark brown, rest concolorous with body, except hind tibia, which have 2 black spots; abdomen dull brown.

Head in front much wider than long; eyes reaching down not upto 0.50 depth of head; frontovertex narrow, finely shagreened; ocellar triangle acute-angled; lateral ocelli almost touching eye; mandibles tridentate, middle tooth most pointed; maxillary palpi with 4 and labial palpi with 3 segments; scape trapezoidal, longer than funicular segments combined; upper margin with a characteristic flap, so far not described in any of the known species; pedicel with 2 distinct upper and lower flaps almost enclosing the first 3 funicular segments, slightly shorter than funicle; funicular segments loosely articulated, segments thicker than long, progressively thicker; last segment as thick as the club; distinctly 3-segmented, subequal to funicle.

Pronotum convex; minutely scaly-reticulate; mesonotum as long as scutellum; axillae not distinctly separate, with 6 setae; sculpturing of scutellum similar to that of mesonotum; setae between 24 and 28; fore wings 2.20 times longer than wide; veins *sm : m : pm : st* ratio 40 : 7 : 4 : 5; 9 distinct setae on *sm;* disc moderately ciliated between base of *st* to stigma; as a whole more lightly infumate than in other species; middle tibial spur longer than metatarsus; hind tibiae with 2 fuscous rings.

Abdomen as long as thorax and head triangularly depressed.

Type locality : India : Delhi

Host : Ceroplastes sp. on edible fig.

Anicetus brevicaudatus Subba Rao

(Fig. 208)

1965 *Anicetus brevicaudatus,* Subba Rao, *Proc. R. ent. Soc. London,* (B) 34 (5-6) : 74.

Closely resembles *Anicetus yasumatsui* Subba Rao in general coloration and size, but differs in the following characters : Scape almost equal to pedicel and funicle together; flap on upper ridge absent; funicular segments thicker than long, but except for the first and second, almost equally thick; club small, shorter than funicle.

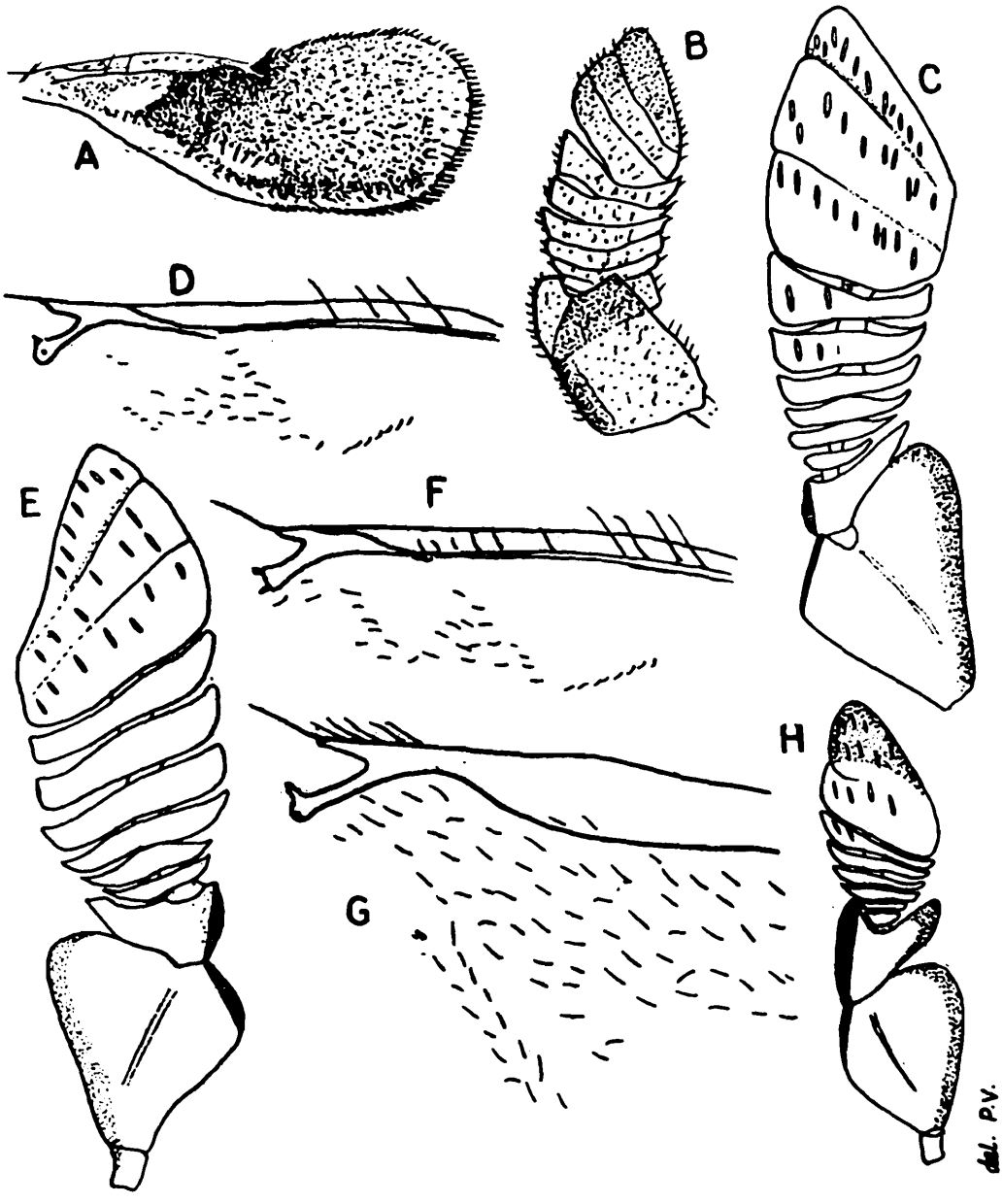

FIG. 208. A-B. *Anicetus brevicaudatus* Subba Rao, female : A. Fore wing; B. Antenna; C-D. *Anicetus howardi* Hayat, Alam & Agarwal, female : C. Antenna; D. Stigmal venation; E-F. *Anicetus angustus* Hayat, Alam & Agarwal, female : E. Antenna; F. Stigmal venation; G-H. *Anicetus integrellus* Trjpitzin, female; G. Stigmal venation; H. Antenna. *(Modified from different authors).*

Fore wings much more infumate; veins *sm : m : pm : st* ratio 30 : 7 : 3 : 4; length 1.04 mm, width 0.45; setae behind vein *sm* sparse and one row of 4 stout setae just behind vein *m* in the hyaline area.

Type locality : Delhi

Host : Ceroplastes sp.

Anicetus beneficiens Ishii & Yasumatsu

(Fig. 209)

1954 *Anicetus beneficiens,* Ishii & Yasumatsu, *Mushi,* 27 (1) : 69.
1965 *Anicetus beneficus,* Agarwal, *Acta Hymen.,* 2 (2) : 84.
1975 *Anicetus beneficus,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 35.

Female : Length 1.59 mm. Head orange-yellow with red ocelli and black eyes; gena with a transverse black band extending between maxillary bases and antennal sockets, connected by an inverted V-shaped black band; antennae thickly setose, compressed, yellowish-orange with some brown markings on scape below and third club segment; pedicel brown; thorax setose, yellowish-orange with some red or brown markings on hind margin of scutum, sides of axillae, margins of scutellum, sides metanotum and middle of propodeum; pleura and sterna yellowish-orange with anterolateral margins of pro and mesoterna and anterior face of coxal articulations black; pronotum black near the front notch; wings hyaline; fore legs yellowish-orange with apex of coxae, trochanters, femora and base of tibiae white; middle legs yellowish-orange; with trochanters and basal 0.50 of femora whitish; hind legs yellowish-orange with apex of coxae, trochanters, basal 0.50 of metatarsus and tarsal segments 2-4 whitish; basal and apical 0.25 of tibiae blackish-patched; apical 0.50 of metatarsus and pretarsus dark brown; abdomen orange-yellow in general with second, third, fourth and fifth tergite dark brown with bluish reflections on sides of setal base.

Face deflected at an angle from frontovertex; frontovertex about 2.50 times longer than wide, 0.20 of head width; ocellar triangle isosceles; lateral ocelli close to eye; ocelloccipital space equal to ocellar diameter; gena equal to eyes; antennal sockets removed from the facial margin by a distance equal to the diameter of the socket; scrobes narrow, deep, interscrobal area ridged; mandibles tridentate; maxillary palpi with 4 and labial palpi with 3 segments; scape greatly laminated, subtriangular, expanded towards apex; pedicel laminate ventrally, longer than first 2 funicular segments combined; funicular segments transverse, thicker gradually apically; club 3-segmented, longer than funicle but shorter than funicle and pedicel combined, obliquely truncate apically.

Pronotum almost uniformly wide, with concave front margin notched in the middle and hind margin convex; axillae broadly contiguous; scutellum slightly convex, narrowly rounded at apex; propodeum narrow in middle; mesopostphragma narrowly rounded at apex; fore wings 2.50 times longer than wide; infuscated, hyaline from base to basal 0.50 of vein *sm* and along apical margin; disc with thickly infuscated, semi-circular, subapical band; vein *sm* slightly curved in apical 0.33 area; vein *m* more than 2 times as long as wide, vein *st* longer than *m*, vein *pm* shorter than either; marginal fringe short, spaced by a distance equal to 0.25 length of a fringe; hind wings 3.50 times longer than wide; marginal fringe short, spaced by a distance equal to 0.25 length of a fringe; middle tibial spur as long as metatarsus; tip of tibiae with a row of 10 pegs; metatarsus, segments 2-4 with 21, 6, 5 and 4 pegs respectively; outer face of coxae with 4 long setae on apical 0.50.

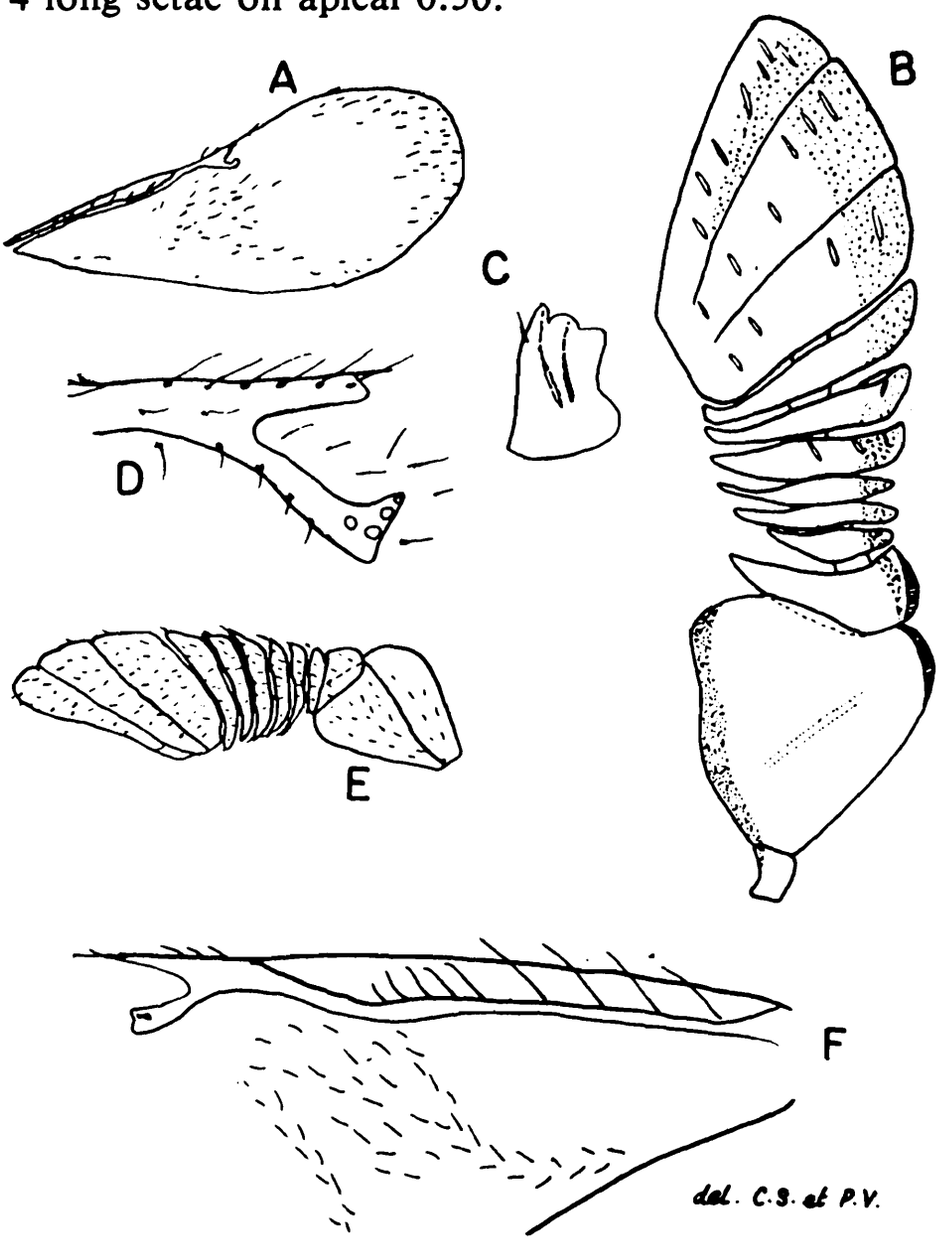

FIG. 209. *Anicetus beneficiens* Ishii & Yasumatsu, female : A. Fore wing; B. Antenna; C. Mandible; D. Stigmal venation; E. Antenna side view; F. Stigmal venation entire.

Abdomen subtriangular, shorter than thorax, ovipositor clearly exserted, issuing at base of abdomen; subgenital plate of uniform width front margin straight, hind margin complete; anterolateral apodemes present; outer plates of ovipositor narrow basally, broad and truncate apically, dorsal margin inflexed upto basal 0.33 length of the plate; first valvifers subtriangular, base concave, articular knobs prominent; second valvifers with a thickened ridge, marginal in basal 0.25 and submarginal on the remaining length of the plate; third valvulae long, conical and immovably articulated with second valvifers.

Type locality : Japan

Distribution : Japan; India : Trivandrum, Aligarh

Hosts : Ceroplastes rubens Mask., *Ceroplastes actiniformis* Green on *Anacardium* sp., *Ceroplastes aurantifolia* (S.)

Anicetus howardi Hayat, Alam & Agarwal

(Fig. 208)

1975 *Anicetus howardi,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 36.

Female : Length 1.62 mm. Body yellow; antennae yellow, scape below brown; scape above at distal 0.33 and pedicel above reddish-brown; club at intersegmental sutures brown above; legs whitish-yellow except a faint brown mark at basal 0.20 of middle tibiae; 2 incomplete rings on hind tibiae and distal 0.50 of its metatarsus brown.

Head dorsum about 1.66 times wider than long; frontovertex less than 0.12 of head width; ocellar triangle acute; ocellocular space less than ocellar diameter, ocelloccipital space more than ocellar diameter; front ocellus more than 0.33 width of frontovertex; mandibles tridentate, teeth acute; antennae similar to *A. ohgushii*, differing as follows : scape a little longer than thick; club about as long as pedicel and funicle combined; sutures basally obsolete; scutellum with 20 setae; fore wing veins *m* and *st* equal; vein *pm* shorter; speculum proximally bordered by a single row of 4 coarse setae; basal triangle with about 13 small setae; middle tibial spur distinctly shorter than metatarsus; tip of tibia and tarsal segments 1-4 with 9, 19, 5, 4 and 4 pegs respectively.

Abdomen shorter than thorax; ovipositor about 0.12 of abdomen; third valvulae 0.50 longer than middle tibial spur

Type locality : Aligarh

Host : Ceroplastes sp. on *Mangifera indica*

Anicetus angustus Hayat, Alam & Agarwal

(Fig. 208)

1975 *Anicetus angustus*, Hayat *et al.*, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 35.

Female : Length 1.56 mm. Scape ventrally and basal part of third club segment brown, rest of antennae yellow; legs yellow except for 2 incomplete bands and brown distal 0.50 of hind metatarsus.

Frontovertex narrow, slightly less than 0.14 of head width, 4.50 times longer than wide; ocellar triangle acute; ocellocular space about 0.33 of ocellar diameter; scape subtrapezoidal, slightly longer than wide; basal 3 funicular segments distinctly shorter than the distal 3; club a little longer than funicle, with 2 sutures basally obsolete; scutellum with 24 setae; veins *m : pm : st* ratio 100 : 55 : 100; speculum bordered proximally by a single row of long, coarse setae, basal triangle with about 35 setae; middle tibial spur a little shorter than metatarsus; tip of tibia and tarsal segments 1-4 bearing 9, 17, 5, 4 and 4 pegs respectively; abdomen shorter than thorax; ovipositor 0.10 of abdomen.

Type locality : Goa, Madgao

Host : Ceroplastes actiniformis Green on *Mangifera indica*

Species Insertae Sedis

Anicetus deltoideus Annecke

(Fig. 210)

1967 *Anicetus deltoideus*, Annecke, *Trans. R. ent. Soc. London*, 119 (4) : 118.

1975 *Anicetus deltoideus*, Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 36.

Annecke quotes from Compere's manuscript the following description :

"In many characters this species is not unlike *abyssinicus*. It can be separated with assurance by the narrow frontovertex and absence of spots or bands on the middle tibia. The ocelli are in an acute angle; the posterior pair less than their own diameter apart and the frontovertex hardly thrice as wide as the diameter of the median ocellus. The single specimen of this species available for study is mounted in balsam, the head is partly folded so as to prevent accurate measurement. In *abyssinicus* the frontovertex is 4 times as wide as the diameter of the median ocellus.

Female : General colour testaceous; abdomen dark metallic across the base; mesoscutum with a slight lustre, probably purplish. Antennae mostly testaceous; ventral and apical margins of scape narrowly bordered with fuscous, the plane or slightly concave face

slightly dark with metallic lustre and furnished with some fine sparse pale setae; dorsal and ventral margins of funicle joints with coarse black setae; apical two joints of club suffused with brown. Face and cheeks with a transverser brown band. Legs mostly testaceous; hind tibiae marked with a brown spot on the outer aspect near base and an elongate oblique spot distead of the middle; fore tibiae slightly suffused with brown basally, most evident on dorsal and ventral aspects; apical tarsal joint of all legs fuscous; basitarsus of hind legs slightly fuscous on distal half.

Length 0.9 mm."

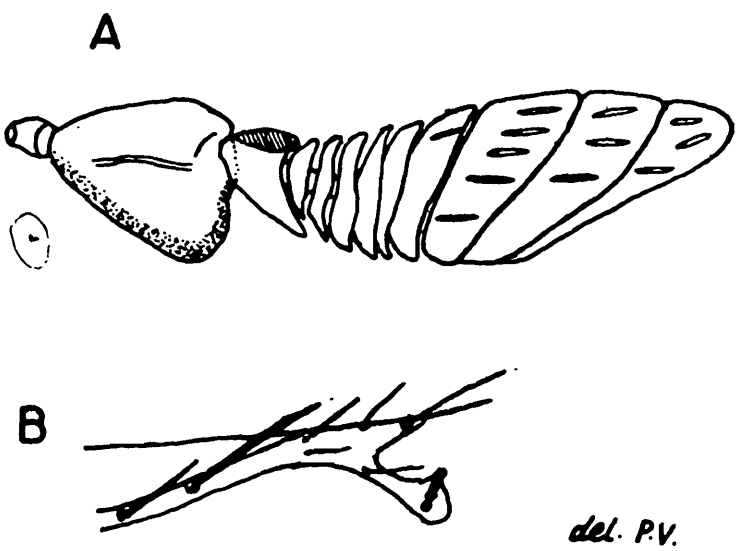

FIG. 210. *Anicetus deltoideus* Annecke, female : A. Antenna; B. Stigmal venation.

To the foregoing description the following points need be added :

Mandibles with three subequal teeth, the uppermost blunt apically, the middle one separated from the upper and lower by rather deep notches; ovipositor and gonostyli shortly but distinctly protruding at apex of abdomen; taking propodeum between spiracles at 100 units, relative length of ovipositor is 96, gonostyli 36, middle tibia 100; head approximately 5 times (possibly a little more; the head is somewhat distorted) as wide as frontovertex at median ocellus.

Type locality : South China

Distribution : China; India : Almora (Kumaon Himalaya)

Hosts : Coccus sp., *Ceroplastodes cajani* (Mask.)

Anicetus integrellus Trjpitzin

(Fig. 208)

1962 *Anicetus integrellus,* Trjpitzin, *Trud. Inst. Zool. Akad. Nauk SSSR,* 30 : 288.
1975 *Anicetus integrellus,* Hayat, Alam & Agarwal *Muslim Univ. Mon.* (Zool.) 9 : 39.

Type locality India

Distribution : India : Punjab (Phillaur)

Host : Ceroplastodes cajani (Mask.) feeding on *Ficus* sp.

Eugahania Mercet

1844 *Borhriothorax* (partim), Ratzeburg, *Ichn. Forstins.,* 1 : 209.
1926 *Eugahania,* Mercet, *Eos,* 11 : 43-45.
1954 *Eugahania,* Krishnamurti, B. & S. Usman, *Indian J. Ent.,* 16 : 327-344.
1955 *Eugahania,* Usman B. & S. Puttarudriah, *Dept. Agric., Mysore State Ent. Bull.,* 16 : 127.
1963 *Eugahania,* Kerrich, *Beitr. Ent.,* 13 : 359-368.
1977 *Eugahania,* Hayat & Khanna, *Orient. Ins.,* 11 (3) : 389-393.

Mandibles stout, bidentate, teeth acute, sharply bent, one tooth smaller than the other; hind wings with costal cell well developed; club unsegmented in male; antennal segments 9 : 1.1.0.7.1; phallobase subcylindrical, concave in front; adeagal apodemes within phallobase; digitus volsellaris with 3 short denticles; paratergites not evident; subgenital plate extending to near tip of abdomen, wide; hind margin slightly concave, with long setae; second valvifers broad, expanded apically; third valvulae absent; outer plates of ovipositor nearly rectangular, with thick ridge dorsally.

Type-species : Eugahania fumipennis (Ratzeburg)

KEY TO SPECIES

1. Pronotum equal to or a little longer than scutum; axillae broadly confluent; scutellum about 0.33 times longer than pronotum and scutum combined — *Eugahania latiscapus* (Ishii)

   Pronotum distinctly shorter than scutum; axillae narrowly confluent; scutellum about 0.11 times longer than scutum and pronotum combined — *Eugahania ishiharai* Tachikawa

Eugahania latiscapus (Ishii)

1925 *Chalcaspis latiscapus,* Ishii, *Depat. Finance Japan Imp. plant. Quarant. Serv. Tech. Bull.,*
1926 *Eugahania latiscapus,* Mercet, *Eos,* 11 : 46.
1956 *Eugahania latiscapus,* Tachikawa, *Kontyu,* 24 : 162.
1963 *Eugahania latiscapus,* Tachikawa, *Mem. Ehime Univ.,* (6) 9 (1) : 94.
1977 *Eugahania latiscapus,* Hayat & Khanna, *Orient. Ins.,* 11 (3) : 391.

Club in female with 3 segments, not much thicker than funicle; similar in colour and sculpture to *E. ishiharai*.

Distribution : Japan : Kyushu, Nagasaki; India : Jodhpur

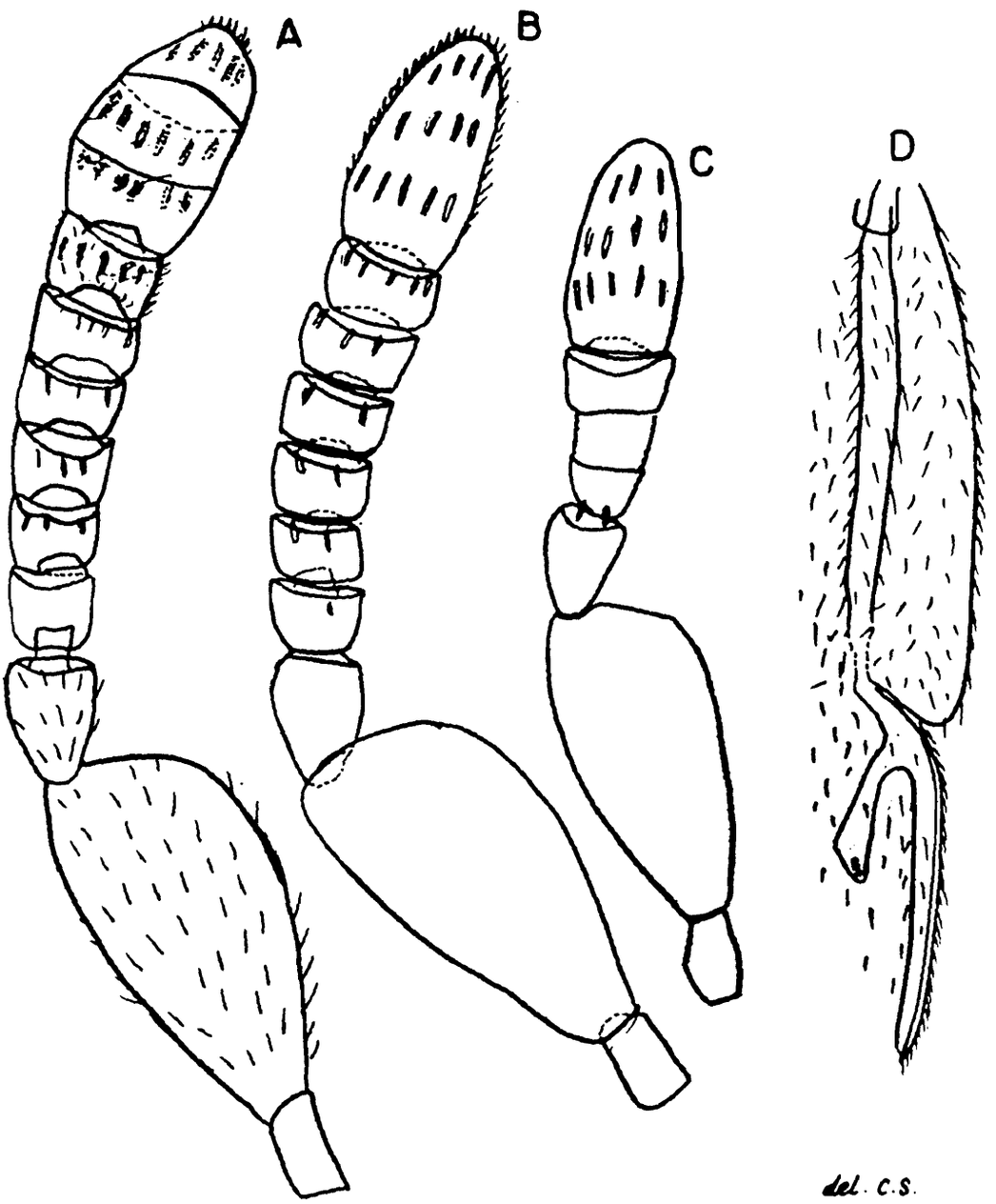

FIG. 211. *Eugahania latiscapus* (Ishii) : A. Antenna, female; C. Antenna, male; D. Stigmal venation; B. *Eugahania ishiharai* Tachikawa Antenna.

Eugahania ishiharai Tachikawa

1956 *Eugahania ishiharai,* Tachikawa, *Kontyu,* 24 : 162, 164-165.
1963 *Eugahania ishiharai,* Tachikawa, *Mem. Ehime Univ.,* (6) 9 (1) : 95.
1977 *Eugahania ishiharai,* Hayat & Khanna, *Orient. Ins.,* 11 (3) : 390.

Basal 3 tarsal segments yellow; segment 4 brownish-yellow; segment 5 black; lateral ocelli slightly nearer the occipital margin than to eye; ocellocular space about 1.50 times ocellar diameter; ocelloccipital space equal to ocellar diameter

Distribution Japan : Honshu, Hiroshima; India : Jodhpur

Neoadelencyrtus Hayat, Alam & Agarwal

1975 *Neoadelencyrtus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 72.

Female : Body dark; dorsum of head and base of abdomen slightly shining; dorsum 2 times wider than long; frontovertex convex, 0.33 of head width; eyes with short hair; occipital margin rounded; in frontal view head wider than deep; scrobal impression shallow, not meeting above; antennal sockets situated far above the oral margin, but below the level of lower orbital borders; subocular suture distinct; gena a little shorter than eye width; mandibles with one ventral obtuse tooth and a broad dorsal truncature, ventral side of mandible with a peg; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape cylindrical; pedicel as long as following 3 funicular segments combined; funicular segments 1-5 thicker than long; segment 6 quadrate; club triarticulate, longer than funicle.

Pronotum with front margin deeply notched, hind margin almost straight; mesoscutum and scutellum flattened; wings hyaline; axillae confluent; vein *m* longer than thick, *st* short and enlarged, *pm* shorter than *st*.

Abdomen equal to or only slightly longer than thorax; cercal plates situated far anterior to middle of abdomen; proximal 0.67 of ovipositor enclosed by subgenital plate, distal 0.33 free; ovipositor short; third valvulae short and movably articulated with second valvifers; outer plates of ovipositor broad, with a submarginal inflexion; subgenital plate with anterior margin almost straight, posterior margin with a notch in middle, sides of the notch with knobs; ovipositor concealed.

Type-species *Neoadelencyrtus mandibularis* Hayat *et al.*

This genus is closely related to *Adelencyrtus* Ashmead and *Adelencyrtoides* Tachikawa & Valentine, but is separated from *Adelencyrtus* by mandibles in females with one tooth and a broad truncation and funicle in male with 6 segments. It differs from *Adelencyrtoides* in the mandibles with one tooth and a broad truncation, shorter funicle, with long ciliation, one denticled digitus volsellaris, absence of metallic lustre in thorax, longitudinally strigose mesonotum, elongated reticulated hexagonal scutellum each cell with a ridge, united axillae and shorter vein *st,* expanded with a short neck.

The relationship of the genus to other allied genera is shown in the following key by Hayat :

1. Females	2
Male	4
2. Mandibles with 2 teeth and a trunature or with one tooth and a broad truncature	3
Mandibles quadridentate; vein *pm* equal to or shorter than *st;* body with metallic lustre; wings hyaline or with infuscated patterns	*Adelencyrtus* Ashmead
3. Mandibles with 2 teeth and a truncature; body with a metallic lustre; mesoscutum scaly-reticulate; scutellum delicately punctate-reticulate; axillae separated by a median salient of the posterior margin of mesoscutum; vein *pm* longer than *st;* vein *st* normal.	*Adelencyrtoides* Tachikawa & Valentine
Mandibles with one tooth and a broad truncature; thorax without metallic lustre; mesocutum longitudinally strigose; scutellum with hexagonally elongate-reticulations, each cell with a ridge; axillae connate; vein *pm* shorter than *st; st* short and expanded, with a short neck	*Neoadelencyrtus* Hayat, Alam & Agarwal
4. Funicle 6 segmented	5
Funicle with 2 transverse, annelliform segments; club long and slightly curved	*Adelencyrtus* Ashmead
5. Funicular segments short and transverse with short cilia; club large, as long as rest of antenna; digitus volsellaris with 2 denticles	*Adelencyrtoides* Tachikawa & Valentine
Antenna with pedicel shorter than first funicular segments; funicular segments longer than thick; club shorter than funicle; cilia on funicular segments long; digitus volsellaris with one denticle	*Neoadelencyrtus* Hayat et al.

Neoadelencyrtus mandibularis Hayat, Alam & Agarwal

(Fig. 212)

1975 *Neoadelencyrtus mandibularis,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 74.

Female : Length 0.72-0.96 mm. Body dull black; head with obscure violet reflection; wings hyaline; antenna dusky-yellow, scape above brown; most of pedicel and funicle pale fuscous; thorax dull black; legs brown; abdomen black, basal segment with metallic-greem reflections.

Head finely reticulate; frontovertex 1.50 times as long as wide, sides almost parallel; lateral ocelli almost contiguous to eye; postocellar space about 2 times ocellar diameter; scape cylindrical, 5 times as long as thick, equal to club; pedicel 2 times as long as thick.

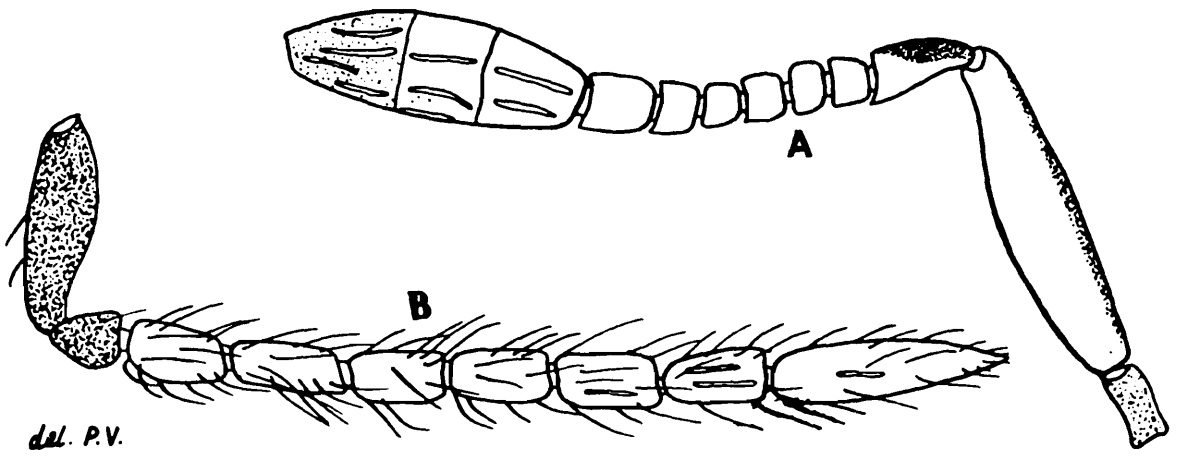

FIG. 212. *Neoadelencyrtus mandibularis* Hayat, Alam & Agarwal : A. Antenna, female; B. Antenna, male. *(Modified from* Hayat).

Pronotum finely reticulate, with long pair of seta postero-laterally; mesoscutum and scutellum flattened; mesoscutum a little longer than scutellum, longitudinally strigoso-reticulate with about 24 setae; axillae scaly-reticulate; scutellum wider than long, apex pointed, reticulate-punctate, reticulations hexagonal and elongate with a ridge in each cell bearing 8 setae; metanotum and propodeum smooth in the middle, faintly transversely striolate at sides; fore wings 2.25 times as long as wide; vein *m* 2.66 times as long as thick; speculum narrow, closed behind; marginal fringe very short; hind wings about 4.50 times longer than wide; marginal fringe about 0.33 width of disc; tips of fore femora, bases and apices of tibiae and tarsal segments 1-4 whitish, tarsal segment 5 dusky; middle trochanters, basal 0.33 and apical 0.20 of femora, basal 0.20 and apical 0.50 of tibiae and tarsal segments whitish; tibial spur shorter than metatarsus; hind trochanters dusky; bases and apices of femora narrowly, basal sixth and apical 0.50 of tibiae and tarsal segments 1-4 whitish, tarsal segment 5 dusky.

Abdomen longer than thorax, triangular, pointed apically.

Male : Length 0.54-0-72 mm. Differs from female as follows : Body dull black, except shining base of abdomen; frontovertex 0.50 of head width, as long as wide; ocellocular space about 0.50 of ocellar diameter, ocelloccipital space equal to ocellar diameter; antennae inserted on level of lower orbital border; antennae yellow, scape and pedicel brown, digitus volsellaris with one denticle.

Type locality : Gonda

Host : Phenacaspis sp. on *Mangifera indica.*

Neodiscodes Compere

1931 *Neodiscodes,* Compere, *Univ. California Publ. Ent.,* 5 : 272.

1965 *Neodiscodes,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 69.

1975 *Neodiscodes,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 38.

Head minisiform, as wide as or a little wider than thorax, occiput strongly concave; vertex acute, viewed above 1.50 times as wide as long; pubescent; gena hardly 0.50 of the eye; genal carina present; striate; scrobes well defined, not deep, not polished; antennae short, scape expanded; funicular segments 6, transverse, gradually becoming larger; club very stout, with 3 segments, longer than funicular segments combined; mandibles tridentate, middle tooth largest; maxillary palpi with 4 and labial palpi with 3 segments.

Thorax short, robust, mesonotum short, 2 times as wide as long, shorter than scutellum, axillae separated, mesonotum finely reticulate, with shallow scattered impressions; fore wings generally infuscate, especially basally and in front, paler apically; vein *m* 2 times as long as thick, veins *pm* and *st* well developed, subequal; stigma not large.

Abdomen a little shorter than thorax; ovipositor not exserted; tenth tergite narrow, of uniform width; paratergites narrow, of uniform width.

Type-species *Neodiscodes martinii* Compere.

Neodiscodes indicus Narayanan & Subba Rao

(Fig. 213)

1960 *Neodiscodes indicus,* Narayanan & Subba Rao, *Indian J. Ent.*, 22 (2) : 75.
1967 *Neodiscodes indicus,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 70
1967 *Neodiscodes indicus,* Kerrich, *Bull. Brit. Mus.*, (Ent.) 20 (5) : 233.
1975 *Neodiscodes indicus,* Shafee, Alam & Agarwal, *Muslim Univ. Mon.*, (Zool.) 10 : 39.

Female : Length 1 70 mm. Body generally metallic greenish-black; cheeks, scrobes and interscrobal prominence metallic-green with red and peacock-blue iridescence; antennae and thorax black; abdomen dark brown to black, shining; all tarsi dark yellowish-brown, terminal segment dark brown; middle tibial spur dark brown.

Head minisiform, 3 times wider than thorax; occiput strongly concave, vertex acute; head in front nearly 1.50 times as wide as long; ocellar triangle acute; ocellocular space more than 0.50 of ocellar diameter; frontoverteax with conspicuous, umbilicate punctae, with fine reticulations; eyes large, pubescent; gena hardly equal to eyes; face shorter than scrobes, scrobes well defined, but not deeply impressed, shagreened, reaching upward to the umbilicately punctate area, slightly rounded above; mandibles tridentate, median tooth largest, acute, dorsal tooth small, far back; maxillary palpi with 4 and labial palpi with 3 segments; antennae short, strongly elbowed; scape strongly dilated below, thickest being less than 0.50 of the length; pedicel large, slightly more than 0.33 of scape; funicular segment strongly transverse, much thicker than long, progressively larger; club large, with 3 segments, longer than funicle.

Thorax short, robust; mesoscutum short, nearly 2 times as wide as long, shorter than scutellum; axillae separated, sutures indistinct; scutellum almost flat, with scattered very shallow, minute umbilicate punctae; uniformly clothed with fine setae; fore wings generally infuscate, especially basally and in the middle; more or less hyaline apically; vein *m* very short, nearly 4 times as long as thick; veins *pm* and *st* well developed, subequal.

Abdomen slightly shorter than thorax; ovipositor not exserted.

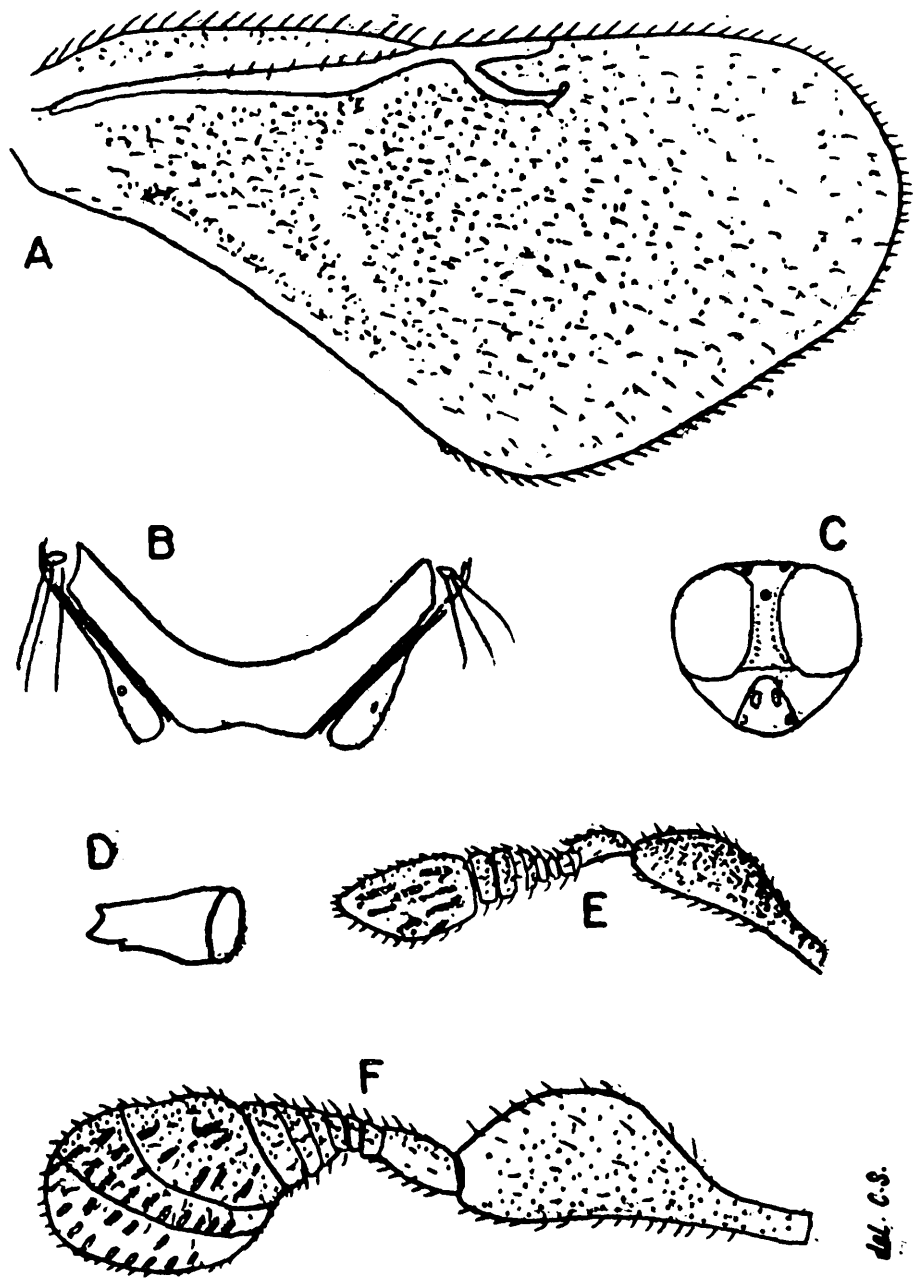

FIG. 213. *Neodiscodes indicus* Narayanan & Subba Rao : A. Fore wing, female; B. Abdomen, female; C. Head in front view, female; D. Mandible, female; E. Antenna, male; F. Antenna, female. *(Modified from* Subba Rao).

Male : Length 1.52 mm. Similar to female; however, scape a little less than 3 times as long as thick; pedicel 2 times longer than thick and longer than the 5 following segments combined; club with 2 segments, shorter than funicle and pedicel combined; hind tibial spurs 2, vein *st* less than 2 times *m*.

Type locality : South India.

Distribution : Naini Tal, Haldwani, Quilon, Gwalior

Hosts : Planococcus robustus Ez. & McC. on different plants, and *Lecanium viride* Green.

This species is closely related to *N. martinii* Compere, but differs in the mandibles, measurement of wing venation, presence of a curved hyaline space in the middle of the wing and also the slight enlargement of vein *st* at apex.

Phaenodiscus Förster

1856 *Discodes,* Förster, *Hym, Stud.,* 2 : 32.
1856 *Phaenodiscodes,* Förster, *Hym. Stud.,* 2 : 144.
1904 *Phaenodiscus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 301.
1909 *Phaenodiscodes,* Schmiedeknecht, *Gen. Ins.,* 97 : 233.
1977 *Cladiscodes,* Subba Rao, *Proc. Indian Acad. Sci.,* (B) 85 (1) : 18.

Female : Head broad, lenticular as in *Discodes* Förster; vertex very broad, nearly 1.50 times eye; eye not over-reaching occipital margin; ocellar triangle obtuse; ocellocular space less than ocelloccipital space; scrobe shallow, interscrobal not divided, flat; antennae inserted close to mouth; scape cylindrical, pedicel, funicular segments 6 and 3-segmented club; mandibles 3-dentate, acute; maxillary palpi with 4 and labial palpi with 3 segments respectively; vertex, face and scrobes deeply umbilicately punctate; malar suture complete, strongly impressed; axillae almost reduced to a continuous narrow strip.

Scutellum large, flat, sculpture similar to head and mesocutum but with over shallow pits and longitudinal articulations; fore wings narrow, basal 0.75 strongly infumate; vein *m* longer than broad; *pm* longer than *m* and *st;* longer than the combined lengths of veins *m* and *pm;* middle tibial spur slightly shorter than metarasus.

Abdomen slightly shorter than thorax; ovipositor very slightly exserted.

Male : Like female; vertex nearly 3 times as broad as eye width; antennae with rami; scape, pedicel a very short first funicular segment, funicular segments 2-5 with very long thin rami; sixth very long, club solid; wings hyaline.

Phaenodiscus sacchari (Subba Rao)

(Fig. 214)

1977 *Cladiscodes sacchari,* Subba Rao, *Proc. Indian Acad Sci.* 2 (B) 85 (1) : 19.

Female : Head black with metallic-green reflections; thorax and abdomen black, eyes grey, scape except radicle yellowish-brown, radicle black; pedicel and funicle brown; club brown, apically darker, all coxae, fore fully, basal 0.75 of middle and femora fully, basal 0.75 of middle and hind femora femora dark brown, rest of legs light brown to testaceous; fore wings strongly infumate only basally.

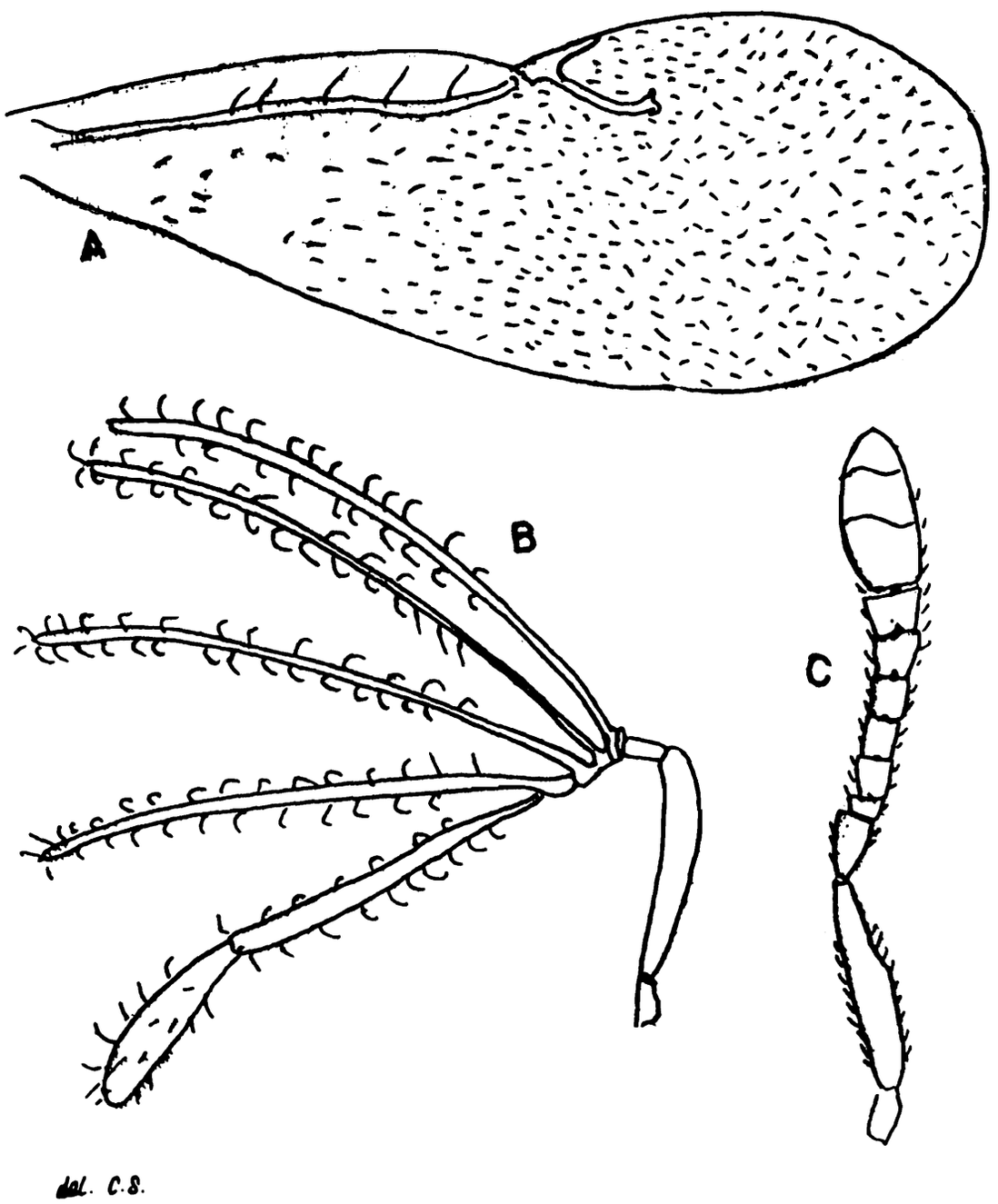

FIG. 214. *Phaenodiscus sacchari* (Subba Rao) : A. Fore wing, female; B. Antenna, male; C. Antenna, female. *(Modified from* Subba Rao).

Occipital margin strongly acute, vertex nearly 1.50 times as broad as eye; eyes 2 times as long as broad; gena shorter than eye; ocelli rather small; scape cylindrical nearly 7 times as long as thick; pedicel a little less than 7 times as long as thick; pedicel a little less than 0.33 of scape; first funicular segment annelliform; segments 2-4 quadrate, fifth and sixth thicker than long; club equal to last 4 funicular segments combined.

Thorax more or less as in *Discodes* Förster; scutellum flat, longer than mesoscutum; axillae narrow strip, apparently fused with scutellum; fore wings 2 times as long as wide; basal area with rows of rough setae, disc with fine setae; vein *m* short, slightly longer than thick, vein *pm* long, vein *st* curved and very long.

Abdomen shorter than thorax, ovipositor very slightly exserted.

Male : Like female except as follows : Ocellocccipital space less than ocellocular space; sixth funicular segment very long, slightly shorter than ramus of the fifth segment; club solid, a little over 0.50 of sixth funiculr segment; wings hyaline; vein *m* nearly as long as *pm; st* shorter than vein *m* and *pm* combined.

Type locality : Lucknow

Distribution : India : Lucknow

Host : Saccharicoccus sacchari on sugarcane

Tetralophidea Ashmead

1900 *Tetralophidea,* Ashmead, *Proc. US nat. Mus.,*22 : 327.
1904 *Tetralophidea,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 293
1909 *Tetralophidea,* Schmiedeknecht, *Gen. Ins.,* 97 : 199.
1910 *Tetralophidea,* Ashmead, *Gen. US nat. Mus.,* 22 : 348.
1921 *Tetralophidea,* Mercet, *Fauna Iberica,* 593.
1979 *Tetralophidea,* Krombein *et al.,* Hymen. N. America, 1 : 967.

Male : Head large; frons wide, flat; eye minute, pubescent; ocellar triangle obtuse-angled; occipital margin acute; mandible bidentate; maxillary palpi with 4 and labial palpi with 3 segments; antennae inserted on lower oribital border, with scape, pedicel, 6-segmented funicle of which 4 are ramose; club entire; scape, stout, slightly compressed; pedicel globose; first funicular segment normal, shorter than pedicel; funicular segments 2, 3, 4 and 5 gradually becoming larger, with one lateral branch; sixth segment normal, equal to fifth; club ovoid; longer than funicle.

Scutum large, entire, convex; axillae contiguous or separate; scutellum large, triangular, convex; fore wing large, hyaline, with complete speculum; vein *m* long, *pm* equal to *m;* vein *st* short; middle tibial spur longer than metatarsus; hind tibial spur double.

Abdomen shorter than thorax, truncate apically.

Female : Frons as wide as eye; eyes oval, large; antennae inserted close to the mouth; pedicel longer than thick; funicle stout, especially apically, club triarticulate, stout, thicker than funicle; fore wing with a transverse infumate band; abdomen oval; ovipositor concealed.

Type-species : Tetralophidea bakeri Ashmead

KEY TO SPECIES

1.	First funicular segment with a branch; fifth funicular segment longest	*T. indica* Mani & Saraswat
	First funicular segment without branch; sixth funicular segment longest	*T. apicata* Mani & Saraswat

Tetralophidea indica Mani & Saraswat

1974 *Tetralophidea indica,* Mani & Saraswat, *Mem. School Ent.,* 3 : 77.

Male : Length 1.30 mm. Body black, with faint metallic-green reflections; head black, eyes dark red; antenna shiny black, scape with faint green reflections; legs black, last tarsal segment of all legs dark brown, coxae, trochanters, femora except apically, tibiae except apically and basally concolorous to the body but with greenish-blue reflections, otherwise legs brown, wings hyaline, veins brown.

Head in front length to width 78 : 100, almost as wide as thorax, finely reticulate; clypeus incised in front; ocellocular space subequal to ocellar diameter, front ocellar space 3.50 times ocellar diameter; eyes bare; mandibles tridentate, third tooth small; antennal segments 9 : 1.1.6.1; antenna to body 10 : 13, scape reduced apically, slightly compressed in the middle, with fine microsculpture, 3.60 times longer than thick; radicle about 0.22 of scape; pedicel 1.55 times longer than thick, about 0.35 of scape, first 4 funicular segments with branches, length ratios of segments, 1-4, 6 : 9 : 20 : 30; third segment almost 2 times the second, fourth 1.50 times the third, fifth funicular segment longest, a little longer than fourth, sixth subequal to the third; funicular rami ratio 50 : 50 : 42 : 28, first ramus equal to 2-5 and 0.25 of the sixth funicular segment combined, second ramus equal to 3-5 and 0.75 of sixth funicular segment combined, third ramus subequal to 4-5 segments combined and fourth ramus subequal to 5 and 6 funicular segments combined; club solid, stout, almost equal to fifth funicular segment, 3.60 times longer than thick; funicular rami and club with whorls of long curved setae.

Pronotum, mesonotum, propodeum and sternites finely reticulately shagreened; scutellum conspicuously longitudinally striolate, with a transverse line in the middle; axillae contiguous; parapsidal furrows present; fore wings short, broad, marginal fringe short, speculum present; length to width 100 : 48; veins *sm, m* and *pm* with 9, 3 and 3 long setae respectively, *m* short, slightly thicker

* According to Hayat (1986) this is to be known as *Manicnemus indicus* (Mani & Saraswat).

apically; veins *sm : m : pm : st* ratio 530 : 100 : 78 : 100; hind wing to fore wing length 72 : 100; fore coxa about 1 70 times longer than thick, with fine microsculpture and with 3 long setae above; femur 4 times as long as thick, 1.55 times longer than coxa, with fine microsculpture and with 3 long setae apically below; tibia subequal to femur, about 6 times longer than thick; tarsus almost subequal to tibia or femur, metatarsus about 0.20 of tarsus, with 10 stout spines below, second segment very slightly shorter than metatarsus and subequal to the third, fourth only very slightly shorter than the third, fifth almost subequal to metatarsus; middle coxa 1.15 times as long as thick, with fine microsculpture; femur 4.75 times longer than thick, 2.53 times coxa, with fine microsculpture; tibia 1.23 times femur, conspicuously thicker apically, 7.80 times longer than thick, spur 0.20 of tibia and about equal to metatarsus, about 6 times longer than thick; tarsus subequal to fore tarsus, 0.62 of tibia, metatarsus 0.16 of tibia, about 0.27 of tarsus, with several long setae below, second segment 0.63 of metatarsus and subequal to the third, fourth 0.50 of metatarsus, fifth slightly shorter than metatarsus; hind coxa 1.60 times wider than long, with fine microsculpture, with one very long and 3 long setae above; femur 3.70 times longer than thick, slightly more than 3 times coxa, with fine microsculpture; tibia 1.12 times femur, thicker apically, about 6 times longer than thick, spur subequal to metatarsus and 0.20 of tibia; tarsus 0.80 of tibia, metatarsus 0.20 of tibia and 0.25 of tarsus, with 7 stout spines below, second segment 0.75 of metatarsus, third 0.66 of the second and almost subequal to the fourth, fifth subequal to metatarsus.

Abdomen shiny with fine reticulate microsculpure, abdomen to body ratio 4 : 13; aedeagus 0.30 of abdomen, genitalia with 2 hooks.

Type locality : Panchgani.

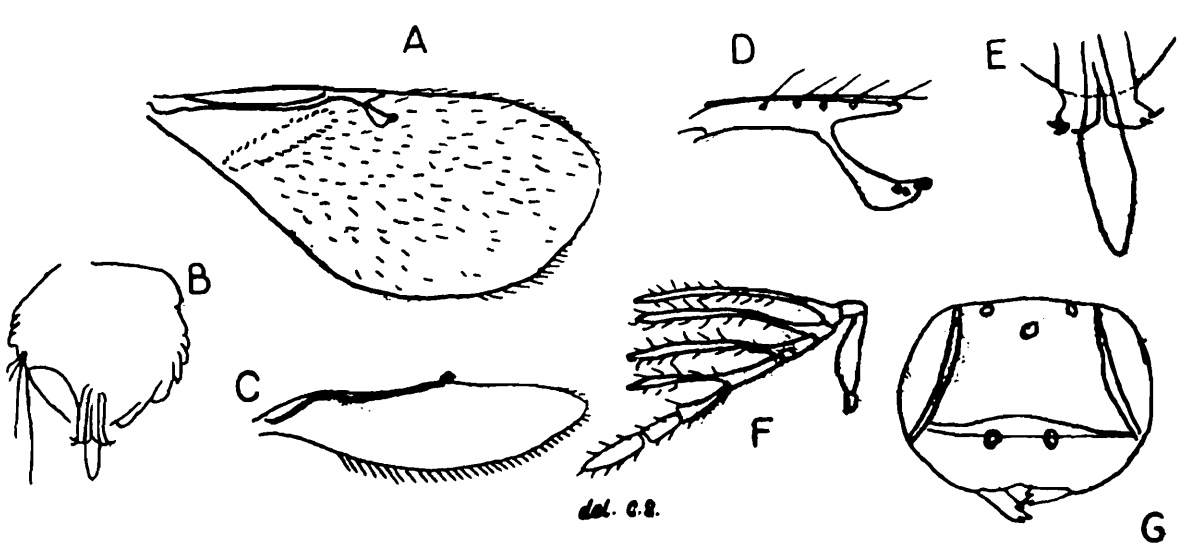

FIG. 215. *Tetralophidea indica* Mani & Saraswat, male : A. Fore wing; B. Abdomen. C. Hind wing; D. Stigmal venation; E. Genitalia; F. Antenna; G. Head in front view.

*Tetralophidea apicata Mani & Saraswat

1974 *Tetralophidea apicata,* Mani & Saraswat, *Mem. School Ent.*, 3 : 79.

Male Length 1.36 mm. Body metallic-green; head black, antenna shiny black, scape with faint green reflections; legs black, last tarsal segment of all the legs dark brown, coxae, trochanters, femora except apically, tibia except apically and basally concolorous with body but with greenish-blue reflections, otherwise legs brown; wings hyaline, veins brown.

Head in front length to width 80 : 100, almost as wide as thorax, finely reticulately-shagreened; clypeus truncate in front; ocellocular space about equal to ocellar diameter, front ocellar space slightly more than ocellar diameter, interocellar space about 3 times ocellar diameter; eyes pubescent; mandibles tridentate, third tooth small; antennal segments 9 : 1.1.6.1; scape slightly attenuated apically, very slightly compressed in the middle, with microsculpture, slightly less than 5 times longer than thick; radicle about the thickness of scape, first funicular segment without branch, segments 2-5 with branches, first segment obliquely enlarged above, about 1.65 times thicker than long, length ratio of segments 1-5, 8 : 5 : 9 : 23 : 34; sixth segment longest, ratio of sixth segment to fifth 41 : 34; funicular rami ratio 25 : 25 : 20 : 13; club solid, stout, subequal to scape, 1.20 times the preceding funicular segment, about 4 times as long as thick; funicular rami and club without whorls of curved setae.

Pronotum, mesonotum, propodeum and sternites finely reticulately shagreened; scutellum conspicuouly longitudinally striolate, without transverse line in the middle; axillae contiguous; parapsidal furrows present; fore wings short, speculum present, length to width 100 : 46; vein *sm, m* and *pm* with 14, 3 and 3 long setae respectively; *m* short, slightly thicker apically; veins *sm : m : pm : st* ratio 555 : 100 : 111 : 120; hind wing to fore wing length 73 : 100; fore coxa 2.20 times as long as thick, with fine microsculputure, with 3 long setae above and 2 below; femur 4 times as long as thick, about 1.40 times longer than coxa, with fine microsculputure, with 3 long setae apically below; tibia subequal to femur, slightly more than 6 times longer than thick; tarsus subequal to tibia or femur, metatarsus 0.26 of tibia or tarsus, with 14-15 stout spines below, second segment slightly less than 0.75 of metatarsus, third subequal to the second, fourth slightly shorter than the third, fifth subequal to metatarsus; middle coxa about 1.50 times longer than thick, with fine microsculpture; tibia 1.30 times femur, conspicuously thicker apically, 8.70 times longer than thick, tibial spur 0.16 of tibia and about equal to metatarsus, about 5 times longer than thick; tarsus subequal to fore tarsus, 0.64 of tibia, metatarsus 0.16 of tibia, 0.25 of tarsus, with several long setae below, second segment 0.80 of metatarsus, third 0.50 of metatarsus and subequal

* According to Hayat (1986), this is to be known as *charitopus apicatus* (Mani & Saraswat).

to the fourth, fifth only very slightly shorter than metatarsus; hind coxa 1.14 times wider than long, with fine microsculpture; femur 4.40 times longer than thick, about 2.60 times coxa, with fine microsculpture; tibia 8 times longer than thick, tibial spur about 0.60 of metatarsus and about 0.13 of tibia; tarsus subequal to mid femur, about 0.80 of tibia, metatarsus 0.22 of tibia and 0.28 of tarsus, with 7-8 stout spines below, second segment 0.70 of metatarsus, third subequal to tibial spur, very slightly shorter than metatarsus, fourth slightly shorter than the third, fifth about 0.80 of metatarsus.

Abdomen comparatively less shiny, finely reticulately shagreened, much shorter than 0.50 of body, abdomen to body ratio 27 : 68; aedeagus 0.33 of abdomen, genitalia with 2 curved hooks.

Type locality : Kollimalai Hills.

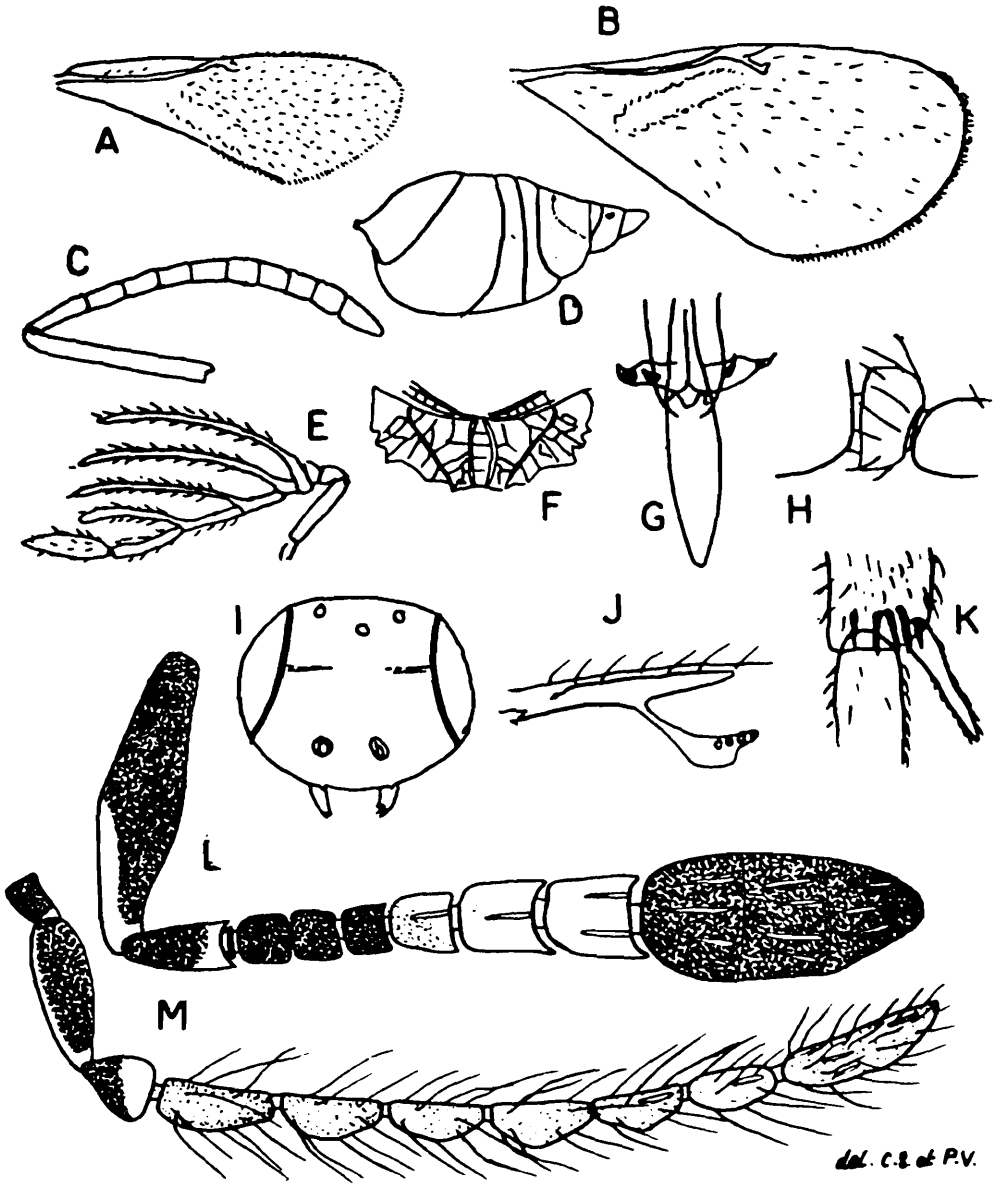

FIG. 216. A-K. *Tetralophidea apicta* Mani & Saraswat : A. Fore wing, female; B. Fore wing, male; C. Antenna, female; D. Abdomen, female; E. Antenna, male; F. Propodeum, female; G. Genitalia, male; H. First funicular segment, male; I. Head in front view, male; J. Stigmal venation, male; K. Middle tibial tibial spur, male; L-M. *Apterencyrtus microphagus* (Mayr) : L. Antenna, female; M. Antenna, male.

6. Habrolepis — Group of Genera

Apterencyrtus Ashmead

1905 *Apterencyrtus,* Ashmead, *Canad. Ent.,* 37 (1) : 5.
1921 *Chiloneurinus,* Mercet, *Fauna Iberica,* 646.
1951 *Apterencyrtus,* Gahan, *Canad. Ent.,* 83 (7) : 171.
1955 *Apterencyrtus,* Ferrière, *Mitt. Schweiz. ent. Gesell.,* 28 (1) : 117.
1957 *Apterencyrtus,* Hoffer, *Acta Soc. ent. Czechos.,* 54 (4) : 349-352.
1957 *Apterencyrtus,* Alam, *Trans. R. ent. Soc. London,* 109 (15) : 423, 438-441.
1963 *Apterencyrtus,* De Santis, *Ann. Com. Invest. Cient. Buenos Aires,* 4 : 359.
1967 *Apterencyrtus,* Trjpitzin, *Trud. Akad. Nauk SSR Zool. Inst.,* 41 : 213.
1969 *Apterencyrtus,* Graham, *Polsk. Pismo Ent.,* 39 (2) : 270.
1979 *Apterencyrtus,* Krombein *et al.,* Hymen. N. America, 1 : 932.

Female : Head hemispherical, viewed from side triangular; frons and vertex long, flat; occipital border acute; ocellar triangle acute; mandibles tridentate, maxillary palpi with 4 and labial palpi with 3 segments; eyes subtriangular, hairy; antenna short, inserted close to the mouth border with scape, pedicel, funicle 6 and triarticulate club; scape slightly expanded; pedicel equal to the following segment; funicular segments transverse, except the last; club much thicker than funicle, reduced apically; mesonotum with procumbent setae, without parapsidal furrows; axillae contiguous; scutellum dull, triangular, with one tuft of hairs; propodeum long; wings borad, hyaline, vein *sm* indistinctly curved in the apical 0.33; vein *m* longer than thick; subequal to *st; pm* a little shorter than *st;* hind tibial spur single; abdomen as long as thorax; subovate subtriangular; ovipositor slightly exserted.

Male : Differs in colour and antennae; scape and pedicel short, funicular segments enlarged; club entire or obscurely biarticulate.

Type-species : Apterencyrtus microphagus (Mayr) (= *Apterencyrtus pulchricornis* Ashmead).

Apterencyrtus microphagus (Mayr)

(Fig. 216)

1838 *Encyrtus lambinus,* Walker, *Ent. Mag.,* 5 : 422.
1844 *Encyrtus euryclea,* Walker, *Ann. Mag. Nat. Hist.,* 14 : 184.
1875 *Cheiloneurus microphagus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 745.
1894 *Cheloneurus diaspidinarum,* Howard, *Ins. Life US Dept. Agr.,* 7 (3) : 256.
1905 *Apterencyrtus pulchricornis,* Ashmead, *Canad. Ent.,* 37 (1) : 5.
1915 *Aphidencyrtus aspidioti,* Girault, *Ann. Soc. ent. Amer.,* 8 (3) : 283, 284.
1915 *Heterolepis mayri,* Ruschka, *Z. angew. Ent.,* 2 : 403.
1924 *Apterencyrtus mayri,* Gahan, *Proc. US nat. Mus.,* 65 (4) : 1.
1957 *Apterencyrtus zonatus,* Alam, *Trans. R. ent. Soc. London,* 109 (15) : 439.
1963 *Apterencyrtus microphagus,* De Santis, *Ann. Com. Invest. Cient. Buenos Aires,* 4 : 351.

1975 *Apterencyrtus mayri,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 57.
1979 *Apterencyrtus microphagus,* Krombein *et al.,* Hymen. N. America, 1 : 933.

Female : Length 1.18-1.37 mm. Body brown to black; head dark metallic; frontovertex, occiput and gena brown with violet lustre; face dark brown, slightly shining; eyes black with short white hairs; radicle, scape except apex, pedicel except apical 0.25 of black; funicular segments 1-3 pale brown, segment 4 dusky basally, rest of fourth segment and segments 5-6 yellowish-white; club brownish-black; pronotum black, yellowish-brown in middle of front margin; mesoscutum brownish-black; scutellum brownish-black with bluish-violet tinge on sides and apex; fore coxa, trochanters, femora and apices of tibiae whitish, rest pale yellow; middle coxae brown, a black patch at distal 0.25 of femora and a similar patch a little distad of base on tibiae, rest of leg white; hind coxa, distal 0.66 of femora except tip, and a patch proximal to middle of tibiae brown; rest of leg white; abdomen black, first tergum shining violet-blue; ovipositor sheaths brown.

Frontovertex reticulate, with a few fine scattered punctae; gena longitudinally striate; dorsum 1.50 times wider than long; frontovertex narrow, 0.20 of head width and more than 3 times as long as wide, flattened and more or less angularly separated from face; gena much shorter than eye width; eyes over-reaching occipital margin behind; scrobes deep, triangular, meeting above; antennal sockets close to facial margin; mandibles with 2 teeth and a broad dorsal truncature; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape a little over 4 times as long as thick; pedicel 2 times as thick as long, shorter than following 3 funicular segments combined; first segment quadrate, segments 2-3 slightly thicker than long, segment 4 quadrate, 5-6 slightly longer than thick; club longer than preceding 5 funicular segments combined; antennal segmental ratio 104 : 44 : 16 : 13 : 12 : 12 : 24 : 28 : 46 : 44 : 44.

Thorax finely reticulate with brown setae; posterior 0.25 with silvery-white setae; axillae with hexagonal reticulations bearing 5 setae; scutellum reticulate; scutellar hair-brush long, black; propodeum smooth; front margin of pronotum deeply notched, hind margin with 12 pairs of setae; scutellum slightly wider than long, shorter than mesoscutum and broadly rounded apically; mesopostphragma with a deep notch apically; fore wings 2.50 times as long as wide; veins *sm : m : pm : st* ratio 8 : 2 : 7 : 4.4; marginal fringe very short; hind wings about 4 times as long as wide; marginal fringe 0.16 of width; middle tibial spur shorter than metatarsus; tip of tibia and tarsal segments 1-4 with 7, 18, 5, 4 and 3 pegs respectively.

Abdomen slightly longer than thorax, pointed apically; cercal plates situated at basal third of abdomen; hind margin of subgenital plate with a notch in the middle, sides of notch with knobs that are

continued laterally into fine ridges; second valvifers with a submarginal ridge running its whole length; third valvulae movably articulated with second valvifers; outer plates of ovipositor with a ridge along proximal third of dorsal margin which in distal 0.66 becomes submarginal and narrow; first valvifers triangular; ovipositor exserted to about 0.20 abdomen length.

Male : Length 0.82-0.92 mm. Differs from female as follows : scape except apex, pedicel above brown; rest of antennal segments yellow, suffused dusky; scape a little over 2.50 times as long as thick; pedicel about as long as thick, much shorter than first funicular segment; funicular segments longer than thick, with long cilia; club unsegmented; antennal segment ratio 80 : 36 : 56 : 64 : 64 : 62 : 60 : 56 : 132

Type locality : Europe

Distribution : Europe, S. America; India : Shoranur

Host : Unknown Diaspid scale

Cheiloneurus Westwood

1833 *Cheiloneurus,* Westwood, *Phil. Mag.,* (3) 3 : 343.
1846 *Chiloneurus,* Brulle, *Hist. Natur. Insect. Hymen.,* 4 : 597.
1848 *Chiloneurus,* Agassiz, *Nomencl. Zool. Index Universalis,* 231.
1856 *Chiloneurus,* Förster, *Hymn. Stud.,* 2 : 32.
1856 *Sterrhocoma,* Förster, *Hymn. Stud.,* 2 : 33.
1876 *Chiloneurus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 743.
1876 *Chiloneurus,* Thomson, *Hym. Skand.,* 4 : 147.
1881 *Chiloneurus,* Howard, *Ann. Rep. US Dept. Agr.,* 1880 : 363.
1898 *Chiloneurus,* Dalla Torre, *Cat. Hym.,* 5 : 241.
1900 *Cheiloneurus,* Ashmead, *Proc. US nat. Mus.,* 22 : 400.
1904 *Cheiloneurus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 304.
1909 *Cheiloneurus,* Schmiedeknecht, *Gen. Ins.,* 97 : 252.
1911 *Cristatithorax,* Girault, *Canad. Ent.,* 43 : 169.
1914 *Cheiloneurus,* Gahan, *Ann. ent. Soc. America,* 7 : 247.
1915 *Cheiloneurus,* Girault, *Mem. Queensland Mus.,* 4 : 87, 122.
1915 *Cristatithorax,* Girault, *Mem. Queensland Mus.,* 4 : 182.
1921 *Chiloneurus,* Mercet, *Fauna Iberica, Encirtidos* : 637.
1923 *Cheiloneurus,* Gahan *et* Fagan, *US nat. Mus.,* 124 : 32.
1923 *Cheiloneurus,* Ruschka, *Verh. zool.-bot. Ges. Wien,* 72 : 6
1928 *Cheiloneurus,* Ishii, *Bull. Imp. Agr. Exp. Sta., Japan,* 3 (2) : 102, 143.
1938 *Cheiloneurus,* Compere, *Bull. Ent. Res.,* 29 : 327.
1938 *Cheiloneurus,* Mani, *Cat. Indian Ins.,* 23 : 93.
1950 *Cheiloneurus,* De Santis, *Rev. Mus. La Plata* (N. Ser.) *Zool.,* 6 : 50.
1951 *Cheiloneurus,* Peck, *US Dept. Agr. Monog.,* 2 : 497.
1952 *Chiloneurus,* Nikolskaya, *Chalcids Faune. SSSR (Chalcidoidea)* : 454.
1953 *Cheiloneurus,* Ferrière, *Mitt. schweiz. ent. Ges.,* 26 (1) : 7, 12.
1955 *Chiloneurus,* Erdös & Novicky, *Beitr. ent.,* 5 (1-2) : 174, 192.
1956 *Cheiloneurus,* De Santis, *Neotropica,* 2 (9) : 69.

1957 *Chiloneurus,* Alam, *Trans. R. ent. Soc. London,* 109 (15) : 441.
1957 *Metacheiloneurus,* Hoffer, *Acta Soc. ent. Czechosl.,* 54 (4) : 339.
1957 *Cheiloneurus,* Hoffer, *Acta Soc. ent. Czechosl.,* 54 (4) : 339.
1958 *Cheiloneurus,* Claridge, *Ent. mon. Mag.,* 94 : 156.
1963 *Cheiloneurus,* De Santis, *An. Com. Invest. Cient. Prov. Buenos Aires,* 4 : 332.
1963 *Cheiloneurus,* Peck, *Canad. Ent.* (Suppl.) 30 : 436.
1963 *Cheiloneurus,* Tachikawa, *Mem. Ehime Univ.,* VI, 9 (1) : 112.
1965 *Cheiloneurus,* Agarwal, *Acta Hym. (Fukuoka),* 2 (2) : 61.
1969 *Cheiloneurus,* Graham, *Polsk. Pismo Entom.,* 39 (2) : 273.
1971 *Cheiloneurus,* Tachikawa, *Trans. Shikoku ent. Soc.,* 11 (2) : 39.
1971 *Cheiloneurus,* Trjpitzin, *Ent. Essay Comm. Yasumatsu,* 123.
1979 *Cheiloneurus,* Krombein *et al.,* Hymen. N. America, 1 : 933.

Female : Body mostly metallic coloured, with yellow spots; head as wide as thorax, viewed in front much longer than wide; occiput excavate, margined; eyes large, glabrous or hairy; mandibles with 2 or 3 teeth or with one tooth and truncation; maxillary palpi with 4 and labial palpi with 3 segments; frontovertex narrow, often very narrow, finely shagreened; antennae inserted close to the mouth; scape not expanded or only very slightly flattened; pedicel longer than the first funicular segment; funicle cylindrical with 6 segments, somewhat expanded in the apical 0.50; club fusiform or slightly compressed, triarticulate; mesonotum wholly or at least near the hind margin clothed with silvery-white pubescence; scutum entire, scutellum with a tuft of long, black, stiff hairs just before apex; fore wing rudimentary or well developed with an infumate zone, vein *m* mostly longer than *st; pm* equal to or shorter than *st.*

Abdomen oval or subconical, pointed or truncate apically; ovipositor hidden or slightly exserted.

Male : Darker than female. Pedicel hardly longer than thick; funicular segments slender, long, distinctly separated from each other, except the first, other funicular segments distinctly constricted in the middle and above with 2 semi-circles of erect hairs; club entire; mesonotum with silvery-white procumbent setae; scutellum with rather long erect hairs, but without apical tufts; wings hyaline or with a faint infumate zone; vein *m* very short.

Type-species : Cheiloneurus elegans (Dalman)

KEY TO SUBGENERA

1. Infumation of fore wing only at tip; scape moderately long, more or less compressed; funicular segments relatively long; club equal to funicle — *Cheiloneurus (Cheiloneurus)* Westwood

   Infumation of fore wing not apical; scape long cylindrical; funicular segments strongly dilated; club much thicker than funicle — *Cheiloneurus (Lepidoneurus)* Hoffer

KEY TO SPECIES

1. Frontovertex as wide as or wider than distance between toruli — 2

   Frontovertex narrower than distance between toruli — 5

2. Scape flattened, expanded beneath, less than 3 times as long as wide; scape, pedicel and funicular segments 1-3 brownish-yellow, segments 4-6 yellow, club black; fore wings infuscated to apex — *C. fusiscapus* Agarwal

   Scape cylindrical, not expanded beneath, at least 4 times longer than thick — 3

3. Funicular segments not all wider than long; club shorter than funicle, not obliquely truncated apically — 4

   Funicular segments transverse, club longer than funicle, obliquely truncated apically — *C. pyrillae* Mani

4. Head and thorax with metallic reflections; pedicel shorter than following 2 funicular segments combined; first funicular segment longer than wide — *C. elegans* (Dalman)

   Head and thorax yellow; pedicel equal to following 2 segments combined; first funicular segment longer than wide, rest of segments subquadrate or wider than long; club equal to 4 funicular segments combined. .. — *C. latifrons* Hayat *et al.*

   Head and thorax brown; pedicel short — *C. bangalorensis* (Subba Rao)

5. Scape not expanded beneath, more than 4 times longer than thick — 6

   Scape expanded beneath, not more than 3 times as long as wide — *C. albifuniculus* Hayat *et al.*

6. Pedicel shorter than following 2 funicular segments combined. — 7

   Pedicel longer than following 2 funicular segments combined; frontovertex 0.03 of head width at narrowest, as wide as front ocellar diameter; funicle yellow, fuscous on side; body metallic except axillae, pleura, sterna, tergum and venter of abdomen yellow — *C. diversicolor* Hayat *et al.*

7. Funicle white, except sometimes first segment which is partly brown — 8

   Funicle brown or black — 10

8. Club equal to preceding 3 funicular segments combined — 9

9. Frontovertex 0.04 of head width; mandibles with 2 teeth and a truncation; funicular segments 2 times as long as wide; anterior 0.50 of pronotum brown, posterior 0.50 orange-yellow; mesoscutum metallic-greenish-violet with anterior margin

narrowly yellow; axillae, scutellum, mesopleura orange-yellow; metanotum and propodeum pale yellow, first tergite slightly shining brown; rest of tergites rusty-yellow, venter and pleura yellow; pedicel orange-yellow, slightly fuscous basally; basal 0.50 of first funicular segment brown, rest of first and segments 2-6 white; legs orange-yellow to whitish except for a faint brown patch at apex of middle femora — *C. longicornis* Hayat *et al.*

10. Frontovertex at narrowest as wide as or less wider than diameter of front ocellus. — 11

Frontovertex at narrowest wider than diameter of front ocellus. — 12

11. Body metallic; frontovertex 0.03 of head width; first 2 funicular segments subequal; legs largely brown with tips of coxae, trochanters, apices of fore and middle femora, middle and hind tibiae yellow; tarsi yellow — *C. basiri* Hayat *et al.*

Body submetallic with axillae, most of pronotum orange-yellow; propodeum dusky or yellow; frontovertex 0.06 of head width; first funicular segment slightly shorter than second; legs white to pale yellow, with hind femora and tibiae faintly fuscous in large part. — *C. nigricornis* Hayat *et al.*

12. Body metallic; first funicualr segment longer than second; apical hyaline margin of fore wing comparatively narrow, about 0.16 width of infuscated area. — *C. kerrichi* Hayat *et al.*

Body metallic, axillae fuscous, first funicular segment shorter than second; width of apical hyaline margin of fore wing about 0.25 width of infuscated area — *C. axillaris* Hayat *et al.*

Cheiloneurus fusciscapus Agarwal

(Fig. 218)

1965 *Cheiloneurus fusciscapus,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 63.

1975 *Cheiloneurus fusciscapus,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 39.

Female : Length 1.26 mm. Head ferruginous, eyes dark; scape, pedicel, funicular segments 1-3 brownish-yellow, funicular segments 4-6 yellow, club black; thorax black, shagreened, pleura and sterna metallic; wings hyaline; fore coxae infumate, rest of legs ferruginous; middle coxae, apical 0.50 of femora and tibiae black; trochanters and basal 0.50 of femora and tibiae and metatarsus ferruginous, remaining tarsal segments dirty-white; hind coxae, trochanters and tarsi ferruginous, femora and tibiae darker above and below; abdomen metallic blue.

Head almost as long as wide; frontovertex wide, slightly wider than long; ocellar triangle right-angled, ocellocipital space equal to

ocellar diameter; lateral ocelli very close to eye; gena shorter than eye; scrobes converging above, deep; toruli close to oral margin; spaced by a distance much less than the width of frontovertex; mandibles with 2 teeth and a truncation; scape fusiform, more than 2.50 times longer than thck, longer than club; pedicel 2 times as long as thick, longer than following 2 segments combined; first funicular segment longer than thick, second as long as thick, segments 3-6 subquare; club 3-segmented, little less than the preceding 4 segments combined, narrowly rounded apically; fourth funicle to third club segments with 3, 3, 3, 8, 7 and 7 sensoria respectively.

Pronotum broad in the middle; scutum broader than scutellum; axillae contiguous; scutellum somewhat convex, elevated apically; apical 0.50 of scutellum with a cluster of long setae; propodeum narrowed in the middle; fore wings more than 2 times as long as wide, infuscated of greater part except at basal 0.33 space between veins *pm* and *st* and horizontally on the middle of disc hyaline; vein *sm* long; vein *m* short not touching front margin, about 0.20 of *st,* vein *pm* shorter than *st,* a little over 0.50 of *st;* vein *st* equal to 0.75 of vein *m;* marginal fringe short, spaced by a distance equal to 0.25 length of a fringe; hind wings with very narrow costal cell; marginal fringe about 0.25 of wing width, spaced by a distance equal to 0.25 length of fringe; tip of hind tibiae with a row of 7 pegs; metatarsus and tarsal segments 2-4 with 15 (in 2 rows) 4, 3 and 2 pegs respectively; tibial spur shorter than metatarus; hind femora slightly curved.

Abdomen subtriangular, dorsum flattened, as long as thorax; cercal plates at the middle of abodmen; ovipositor less than 0.16 of abdomen; apical 0.50 of outer plates of ovipositor clearly much wider than basal 0.50.

Type locality : Aligarh

Distribution Aligarh, Manmad, Hoshangabad

Host : Pseudococcus citri Risso on *Citrus medica* L.

Cheiloneurus pyrillae Mani

1939 *Cheiloneurus pyrillae,* Mani, *Indian J. Ent.,* 1 (1 & 2) : 73.
1940 *Cheiloneurus pyrillae,* Pruthi & Mani, ICAR *Misc. Bull.,* 30 : 16.

Female : Length 0.90-1.20 mm. Body generally yellow, yellowish-brown or ferruginous; head yellow; pedicel and funicular segments dark brown; thorax yellow or ferruginous, without any silvery pubescence; mesopleura white, except for a little dark patch at apex; propodeum dark at sides; fore wing almost similar to those in *C. gonatopidis* Perk., but somewhat lighter; vein *m* black; fore and middle femora white; hand femora darker; fore and middle tibiae and tarsi pale yellow; hind tibiae dark yellow, hind tarsi white;

scutellar tuft of long black setae in the posterior 0.50, pointing caudad, but not touching apex; abdomen yellow or ferruginous, light at extreme base, darker in the middle.

Vertex narrow, not flat; eyes strongly convergent above; ocellar spaces equal; antennae inserted near the mouth border; segments 11; scape slender but distinctly flattened and rounded below, its length to that of flagellum in the ratio 4 : 7; funicular segments 6; club longer and thicker than funicle, obliquely truncate, compressed.

Fore wings with veins *m pm st* ratio 8 : 4 5.

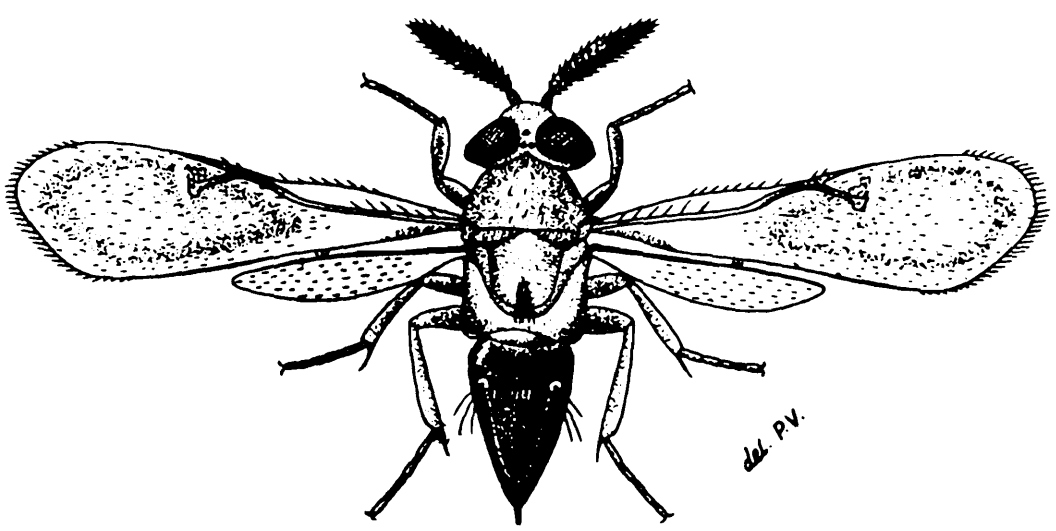

FIG. 217. *Cheiloneurus pyrillae* Mani, female.

Male Length about 0.75 mm. Head black or brown; scape and pedicel yellow, rest of antennae dark brown; mesonotum dark cephalad, light caudad; scutellum darker behind; rest of thorax pale yellow; propodeum darker at sides; legs pale yellow; hind tibiae darker in the apical 0.50; abdomen black, except at base.

Tyep locality : Karnal (Punjab)

Host : Eggs of *Pyrilla* sp. on *Saccharum officinarum*

Cheiloneurus elegans (Dalman)

1820 *Encyrtus elegans,* Dalman, *Svenska Vetens. Akad. Handl.,* 41 : 151.
1933 *Cheiloneurus elegans,* Gahan, *US Dept. Agric. Tech. Bull.,* 174 : 60-64.
1958 *Cheiloneurus elegans,* Claridge, *Ent. month. Mag.,* 94 (1130) : 157.
1971 *Cheiloneurus elegans,* Trjpitzin, *Ent. Essay Comm. Yasumatsu Tokyo,* 125.
1975 *Cheiloneurus elegans,* Mani & Kaul, *Mem. School Ent.,* 4 : 49.
1975 *Cheiloneurus elegans,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 45-46.
1979 *Cheiloneurus elegans,* Krombein *et al.,* Hymen. N. America. 1 : 934.

Female Length 1.66 mm. Body yellowish-brown to brown, with obscure metallic reflections on some parts; eyes black; antenna dark brown; except yellow scape and yellowish-white apical 0.75 of second and third club segment; lateral margins of propodeum with metallic-green reflections; fore leg brown except for the yellow coxa; hind leg yellow except for brown markings on femur and tibia; middle leg yellow except for yellowish-brown, tip of femur and apical 0.80 tibia; fore wings infumated brown, veins brown; hind wings hyaline; posterior 0.50 of abdomen shiny, lateral margins metallic-green.

Head smooth, with obscure microsculpture; length to width 91 : 100; ocellocular space equal to ocellar diameter, front ocellar space 1.50 times ocellar diameter, interocellar space 4 times ocellar diameter; scape 4.16 times longer than thick; pedicel 2.10 times longer than thick and 0.40 of scape; first funicular segment 1.33 times longer than thick and 0.50 of pedicel; second funicular segment 1.16 times longer than thick and 0.87 of the first funicular segment; third funicular segment 1.20 times longer than thick; fourth funicular segment 1.25 times longer than thick and subequal to the third funicular segment; fifth funicular segment as long as thick; sixth funicualr segment 0.83 times longer than thick; club 3 segmented, 3 times longer than thick, subequal to the preceding 3.50 of funicular segments combined, first 2 segments equal, third segment 1.20 times as long as thick.

Scutellum and mesonotum finely longitudinally reticulate; axillae finely transversely reticulate; pronotum and mesoscutum with scattered setae; posterior side of scutellum with 12 very long black bristles arranged medially; axillae contiguous; fore wing length to width 100 : 36; veins *sm : m : pm : st* ratio 244 : 100 : 39 : 16; hind wing length to width ratio 100 : 18; fore coxa 1.33 times as long as thick, femur 3.50 times as long as thick and 1.75 times coxa; tibia 4.33 times as long as thick and subequal to femur; tarsus 0.84 of tibia; middle coxa 2 times longer than thick; femur 7.33 times longer than thick and 2.20 times coxa; tibia thickened apically, about 7 times longer than thick, subequal to femur, tibial spur 0.33 of tibia. 1.33 times metatarsus and about 0.44 of tarsus; tarsus about 0.75 of tibia, metatarsus; about 0.20 of tibia; second segment 0.80 of metatarsus; third segment 0.62 of the second; fourth segment 0.80 of the third; fifth segment subequal to the second; hind coxa 1.12 times as long as thick; femur 4.11 times longer than thick and about 2 times coxa; tibia 7.33 times longer than thick; tarsus 0.81 of tibia.

Abdomen finely reticulate, with long bristles, about 1.25 of thorax.

Type locality : Europe

Distribution : Europe; India : Coorg (Western Ghats)

Hosts : Mayetiola destructor (Say); *Platygaster zosine* Walk.

Cheiloneurus latifrons Hayat, Alam & Agarwal

(Fig. 218)

1975 *Cheiloneurus latifrons,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.)9 : 47.

Female : Length 1.20 mm. Head orange-yellow; radicle pale brown; scape orange-yellow, with a narrow strip of brown at basal 0.33 of below; rest of antenna brown; thorax yellowish-brown except lateral and posterior margins of mesoscutum faintly infuscated;

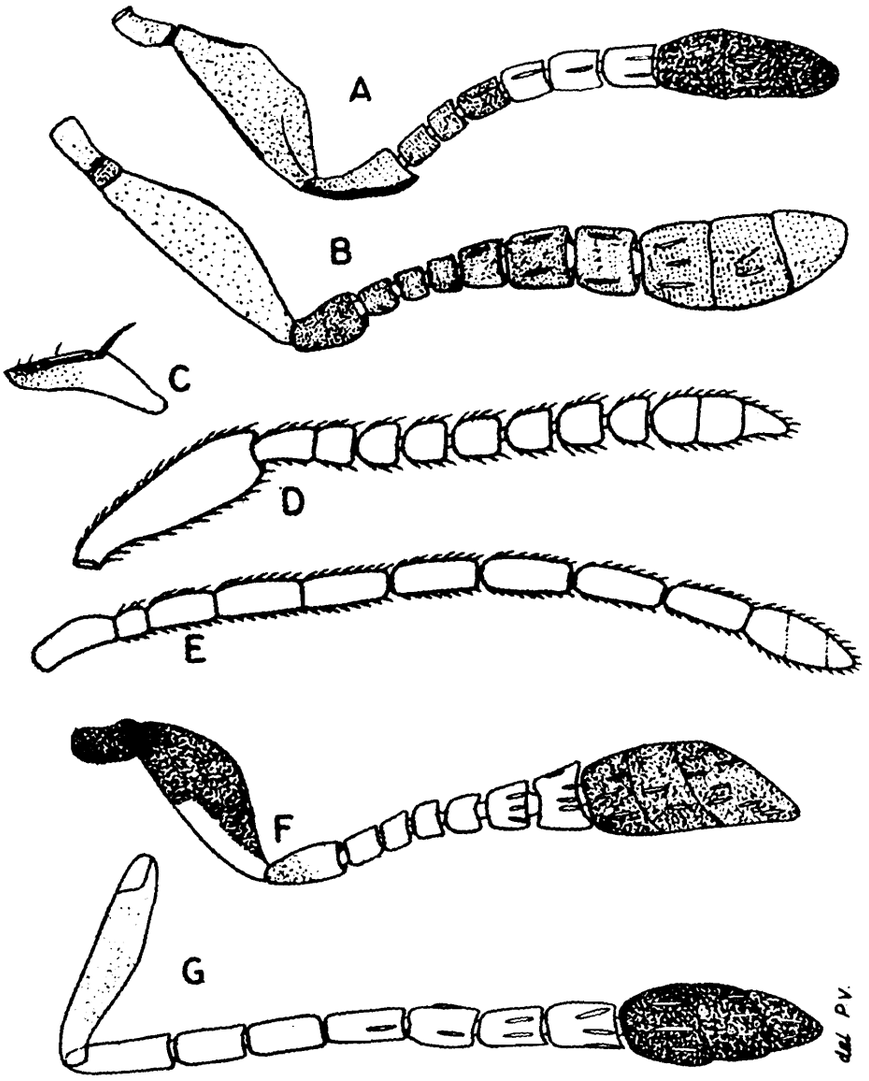

FIG. 218. A. *Cheiloneurus fusiscapus* Agarwal, female : Antenna; B.*Cheiloneurus latifrons* Hayat, Alam & Agarwal, female : Antenna; C-E. *Cheiloneurus bangalorensis* (Subba Rao) : C. Fore wing part; D. Antnna, female; E. Antenna, male; F. *Cheiloneurus albifuniculus* Hayat, Alam & Agarwal, female : Antenna; G. *Cheiloneurus longicornis* Hayat, Alam & Agarwal, female : Antenna. *(Modified from different authors).*

propodeum brown, faintly shining; fore wings infuscated except basal 0.33 of which is hyaline; legs yellow except as follows : fore coxae white; basal 0.50 of middle femora and tarsi white; tibia with a brown ring at basal 0.33, base of tibia upto brown ring white; hind coxae, basal 0.25 of tibia and tarsal segments 1-4 white; last tarsal segment dusky; femora with elongate brown strip on distal 0.66; abdomen brown, metallic; venter pale.

Frontovertex about 0.33 of head width, slightly less than 2 times as long as wide; ocellar triangle obtuse; scrobes horseshoe-shaped, deep; distance between antennal sockets less than width of frontovertex; mandibles with 2 acute teeth and a truncation; scape slightly thickened in the middle, about 4 times as long as thick; pedicel as long as following 2 funicular segments combined; first funicular segment slightly longer than thick, segments 2, 5 and 6 as long as thick, segments 3 and 4 slightly thicker than long; club equal to preceding 4 funicular segments combined.

Fore wings about 3 times as long as wide; vein *m* about 4 times longer than *st,* which is longer than *pm;* marginal fringe short; middle tibial spur longer than metatarsus; apical rim of tibia with 8 pegs.

Abdomen slightly longer than thorax.

Type locality Mysore, Bangalore, Hebbal

Host *Peliococcus* sp. on *Prosopis spicigera*

Cheiloneurus bangalorensis (Subba Rao)

(Fig. 218 & 219)

1957 *Chrysopophagus bangalorensis,* Subba Rao, *Proc. Indian Acad. Sci. Bangalore,* (B) 46 : 382.

1957 *Ectromatopsis indica,* Subba Rao, *Proc. Indian Acad. Sci. Bangalore,* (B) 46 : 384.

1972 *Cheiloneurus bangalorensis,* Hayat, *Acta ent. bohemoslov.,* 69 : 212.

Female Length 1.25-1.60 mm. Body generally yellow-brown, with dark patches on thorax and abdomen behind; eyes black to dark brown; scape and pedicel yellowish-brown; funicle black, first club segment black, second partly dark, third yellowish; mesoscutum dark; scutellum pale, with tuft of strong black hairs; all coxae lemon-yellow, rest deep yellow; middle femur and tibia with dark brown patches; first abdominal tergite dark brown, second light yellow, rest dark brown.

Axillae and scutellum with fine close umbilicate punctae, with reticulated lines; mesoscutum broadly punctate; frontovertex minutely punctate; head above lenticular; vertex narrow; in front longer than wide; finely reticulately-punctate; ocellar triangle equilateral; interocellar space 2 times ocellocular space; face laterally

subtriangular; eyes reach downward about 0.75; scrobes very short, shallow 2 times antennal sockets; genal suture faint below the eyes; antennae inserted close to the oral margin, sockets about 3 times their own diameter; long, slender, slightly dorsoventrally flattened; scape slender; pedicel smaller; funicle flattened; first funicular segment longer than thick, second segment thicker than long, third and fourth almost as long as thick, fifth and sixth thicker than long; club with 3 segments, first segment long, last segment rounded apically.

Mesoscutum strongly convex, broader than long, closely coarsely punctate, hairy; axillae connate; scutellum convex, longer than scutum; wings more than 3 times longer than wide; vein *sm* 2.50 times *m,* thickened basally; vein *m* slightly more than 7 times longer than thick; vein *pm* short, thick; vein *st* slightly longer than *m;* marginal fringe moderately short.

Abdomen conical, slightly shorter than head and thorax combined; ovipositor slightly exserted.

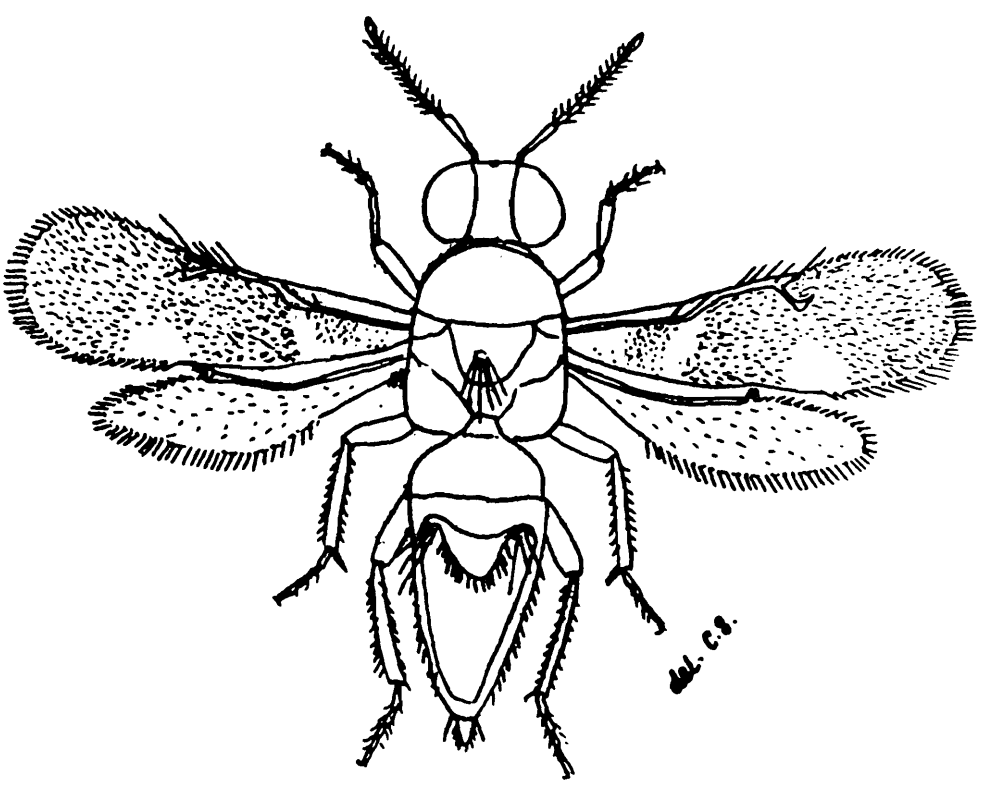

FIG. 219. *Cheiloneurus bangalorensis* Subba Rao, female.

Male : Length 0.80-1.40 mm. Head much thinner frontoccipitally than in female; tuft of hairs on the scutellum absent; abdomen stout, ovate, shorter than head and thorax combined; first and second tergites pale yellow, rest dark brown; antennae light yellow to dark brown; wings hyaline.

Type locality Bangalore

Distribution : Aligarh, Bangalore

Host *Antonina indica* Green (Rhodes-grass scale)

Cheiloneurus albifuniculus Hayat, Alam & Agarwal

(Fig. 218)

1975 *Cheiloneurus albifuniculus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 48.

Female : Length 1.16 mm. Body metallic-violet; frontovertex bluish-green, violet on temples and cheeks; scrobes green; radicle, scape except apical 0.50 above, pedicel basally and club brownish-black, rest of antenna white; mesonotum violet, posterior 0.33 with white pubescence; axillae and scutellum bronzy; fore wings infuscate at base, apex hyaline; fore legs white with a dusky strip above distally on femora, base of tibiae fuscous-yellow; middle legs white with distal 0.25 of femora and basal 0.33 of tibiae dusky; hind legs whitish with distal 0.50 of femora and basal 0.50 of tibiae dusky brown; abdomen metallic-violet-blue with some bronzy lustre; ovipositor sheaths yellow.

Frontovertex punctate-reticulate with silvery-white setae; frontovertex 0.22 of head width; eyes convergent before front ocellus; ocellar triangle acute, lateral ocelli almost contiguous with eye; ocelloccipital space equal to 2 ocellar diameters; head in front slightly longer than wide; scrobes not carinate; toruli close to oral margin, gena equal to eye; mandibles tridendate; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape expanded beneath, slightly less than 3 times as long as thick; pedicel 2 times as long as thick, longer than following 2 funicular segments combined; first 4 funicular segments subequal; first segment a little longer than thick, rest thicker than long; club large, slightly shorter than funicle, apical segment obliquely truncate.

Thorax with reticulations dense; scutellar tuft of setae black; metanotum with transverse striations laterally; propodeum smooth in the middle, finely reticulate laterally, with a few white hairs about the spiracles; pronotum uniformly wide, front margin concave; axillae confluent; scutellum wider than long, broadly rounded at apex; mesopostphragma notched at apex; fore wing 2.75 times as long as wide; veins *m : pm : st* ratio 40 : 5 : 11; apical margin of wing with 2-3 rows of brown setae; hind wings hyaline; middle tibial spur longer than metatarsus; tibia and tarsal segments 1-4 with 6, 17, 5, 5 and 4 pegs respectively.

Abdomen a little longer than thorax, elongate, triangular, pointed apically; cercal plates at basal 0.33; anterior margin of subgenital plate with a median lobe, posterior margin with a notch

in middle, sides of notch with ridges, mid longitudinal groove complete; first valvifers triangular; second valvifers with a submarginal ridge, about 2.66 times longer than third valvulae; latter movably articulated with it; outer plates of ovipositor widening behind with a submarginal ridge running upto 0.83 of plate.

Type locality : Kancheepuram

Distrtibution : Ponnur, Nellore, Arakonum, Ranipet

Host : Nipaecoccus sp. on *Casuarina equisetifolia*

Cheiloneurus diversicolor Hayat, Alam & Agarwal

(Fig. 220)

1975 *Cheiloneurus diversicolor,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 56.

Female : Length 1.30 mm. Body metallic-blue and yellow; frontovertex shining metallic-bluish, with some bronzy lustre; scrobes green and bronzy; space between antennal sockets, lower of 0.50 of gena and occiput except a brown patch above foramen, orange-yellow; scape white, except narrowly above and below, pedicel basally and funicle dusky-yellow; club dark brown; rest whitish; front margin of scutum yellow, posterior 0.66 of metallic bluish-green; scutellum concolorous with frontovertex; axillae, pleura, sterna testaceous to orange-yellow; propodeum brown; fore wings infuscate, with basal 0.33 and apical margin hyaline; legs whitish, except middle knee, middle tibiae except both ends, apex of hind femora and hind tibiae except ends which are fuscous; first tergum metallic-brown; tenth tergum, pleura and sterna orange-yellow, little shining.

Head above slightly less than 2 times as wide as long; gena longer than eye; ocellar triangle acute; lateral ocelli contiguous to eye, removed from occipital margin by 3 ocellar diameters; scape around 3.50 times as long as thick; pedicel less than 2 times its own width, longer than following 2 funicular segments combined; first funicular segment slightly longer than thick; segments 2, 3, 5 and 6 slightly thicker than long; fourth slightly longer than thick, club 2 times as long as thick, apex rounded, shorter than preceding 4 funicular segments combined.

Mesoscutum wider than long; axillae confluent; scutellum slightly wider than long, broadly rounded apically, scutellar tuft compact, black; fore wing width of apical hyaline margin about 0.12 of width of infuscated area; veins *m : pm : st* ratio 22 : 2 : 5; vein *sm* with 8 long setae of which 3 are hyaline; middle tibial spur longer than metatarsus.

Abdomen slightly shorter than thorax, triangular; cercal plates at basal 0.25; ovipositor about 0.11 of abdomen.

Type locality : Srirangam

Host : Ceroplastodes sp.

Cheiloneurus longicornis Hayat, Alam & Agarwal

(Fig. 218)

1975 *Cheiloneurus longicornis,* Hayat *et al., Aigarh Muslim Univ. Mon.* (Zool.) 9 : 50.

Female Length 1.58 mm. Frontovertex metallic greenish-blue, gena bluish-green with a slight violet tinge; scrobes bluish-green, interscrobal area dark fuscous with a transverse green band just above facial margin; occiput above brown, sides yellow; scape above basal 0.50 of first funicular segment brown; basal 0.33 of scape yellow; pedicel slightly fuscous basally, rest yellow; distal 0.33 of scape, rest of funicular segments white; club dark brown; pronotum with anterior 0.50 brown, posterior 0.50 of yellow; mesoscutum metallic-green with slight violet tinge, front margin yellow; rest of thorax orange-yellow; pubescence whitish, scutellar brush black; hind wings hyaline; legs yellow to whitish, except for a faint dusky patch at tip of middle femora; first tergum slightly shining brown, rest fuscous-yellow; pleura and venter yellow.

Dorsum slightly wider than long; eyes convergent anterior to front ocellus; frontovertex at narrowest about 1.27 times head width; ocellar triangle acute; lateral ocelli contiguous to eye, interocellar space equal to 1.50 times ocelloccipital space; gena slightly shorter than eye; facial impression broad, upper margin rounded, far below the level of lower orbital border; antennal sockets spaced by a distance equal to 2 times the length of a socket and removed from facial margin by less than their own length; labrum concave, with 5 long setae; scape 5 times as long as thick; pedicel 2.33 times as long as thick; shorter than following 2 funicular segments combined; funicular segments longer than thick, subequal; club shorter than preceding 3 funicular segments combined.

Fore wings about 3 times as long as wide; infuscated except basal 0.33 and apical margin; veins *m : pm : st* ratio 7 : 1 : 2; hind wings about 4.50 times longer than wide; middle tibial spur longer than metatarsus; tip of tibia and tarsal segments 1-4 with 8, 24, 8, 6 and 4 pegs respectively.

Abdomen longer than thorax, subtriangular, apex pointed; second valvifers nearly 3 times as long as third valvulae, latter shorter than middle tibial spur

Type locality : Arakonam

Host : Nipaecoccus sp.

Cheiloneurus basiri Hayat, Alam & Agarwal

(Fig. 220)

1975 *Cheiloneurus basiri,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 53.

Female : Length 1.89 mm. Body metallic greenish-black to blackish-brown; head metallic bluish-green; scape above and below, pedicel and funicle brown, club black, rest of scape white; pronotum, posterior 0.50 of mesonotum and axillae greenish-blue, anterior 0.50 of mesoscutum golden; scutellum mostly brassy-green, sides with bluish lustre; mesopleura blue, with a coppery tinge; metanotum dark brown; propodeum green with some coppery lustre; wings infuscated with base and apex hyaline; legs dark brown except tip of all coxae, trochanters, fore femora and fore tarsi which are yellow; middle femora at both ends largely yellow with brown patch in the middle, tibiae except base and tip, tarsi and spur yellow; abdomen blackish-brown.

Head above 1.33 times wider than long; eyes converging below front ocellus where frontovertex about 1.75 times head width; ocellar triangle acute; ocelloccipital space 2 times ocellar diameter; gena longer than eye; scrobes semi-circular; scape more than 4 times as long as thick; pedicel more than 2 times as long as thick, shorter than following 2 funicular segments combined; segments longer than thick, club slightly shorter than preceding 3 funicular segments combined.

Scutellum highly convex, with the tuft of thick black setae; middle tibial spur longer than metatarsus and longer than third valvulae; fore wing with veins *pm : st* ratio 2 : 1.

Abdomen slightly shining, longer than thorax.

Type locality : Goa, Sanguem

Distribution : Goa, Kerala

Host : Saissetia hemisphaerica (Targioni)

Cheiloneurus nigricornis Hayat, Alam & Agarwal

(Fig. 220)

1975 *Cheiloneurus nigricornis,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 52.

Female : Length 1.09 mm. Frontovertex brown, with faint metallic reflections; interscrobal area shining pale green, basal 0.50 of gena yellow, apical 0.50 of brown; scape whitish dusky above and below; pedicel fuscous-yellow; funicule and club dark brown; pronoutm orange-yellow, with a small pale brown patch in the middle; mesoscutum and scutellum feebly shining brown; axillae yellow; propodeum dusky or yellow; wings infuscated with 0.33 and apical margin hyaline; legs whitish to pale yellow with hind femora and tibiae faintly fuscous; abdomen dark brown, slightly shining.

Dorsum less than 2 times as wide as long; frontovertex considerably narrowed in front ocellus, about 0.06 of head, with as wide as the diameter of front ocellus; ocellar triangle acute, lateral contiguous to eye, ocelloccipital space over 2 ocellar diameters;

scrobal impression rather deep, semi-circular above; scape 5.50 times longer than thick; pedicel 2.50 times longer than thick, funicular segment longer than thick; first segment slightly shorter than second segments; segments gradually becoming shorter and thicker; sixth segment about 2 times thicker than first; club as long as the preceding 3 funicular segments combined.

Hind wings hyaline, about 4.50 times longer than wide; marginal fringe 0.20 width of wing; middle tibial spur longer than metatrarsus, tip of tibia and tarsal segments 1-4 with 6, 20, 7, 6 and 5 pegs respectively.

Abdomen as long as thorax; ovipositor 0.16 of abdomen.

Type locality : Balwant Nagar (Narkatiagana) Bihar

Distribution : Bihar U.P.

Host : Nipaecoccus sp. on *Mangifera indica.*

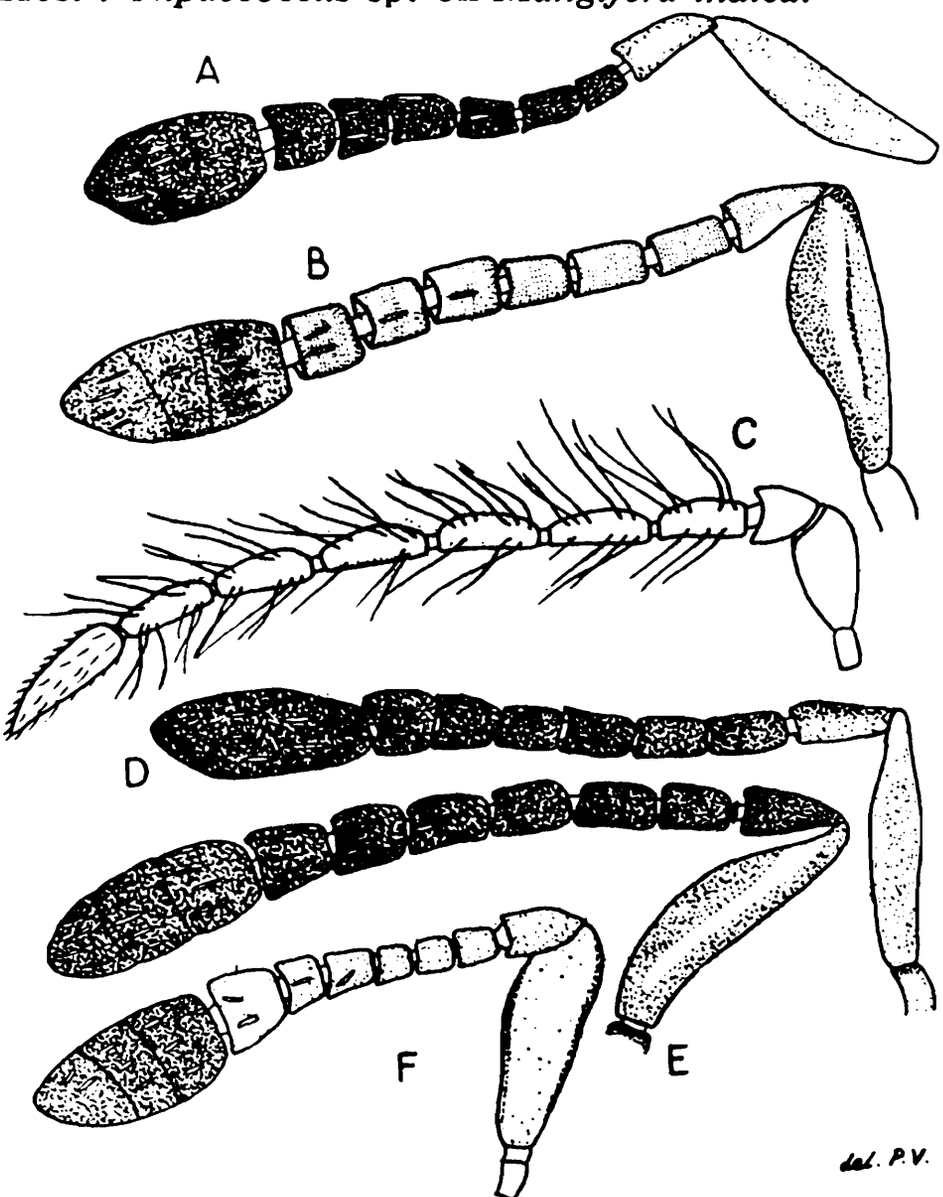

FIG. 220. A. *Cheiloneurus axillaris* Hayat *et al.*, female; Antenna; B-C. *Cheiloneurus kerrichi* Hayat *et al.*, B. Antenna, female; C. Antenna, male; D. *Cheiloneurus nigricornis* Hayat *et al.*, female, Antenna *E. Cheiloneurus basiri* Hayat *et al.*, female, Antenna; *F. Cheiloneurus diversicolor* Hayat *et al.*, female : Antenna; *(Modified from different authors).*

Cheloneurus kerrichi Hayat, Alam & Agarwal

(Fig. 220)

1975 *Cheiloneurus kerrichi,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 54.

Female : Length 1.70 mm. Head dark metallic, with green reflections; scrobes with golden reflections; radicle pale brown, scape pale yellow with a pale brown stripe in the middle, rest of antenna brown; club dark brown; thorax metallic-green; fore wings infuscated with basal 0.33 and apical margin hyaline hind wings hyaline; fore legs pale yellow; tibia above with a narrow brown stripe; middle legs white to pale yellow, with coxae and tibiae except base and apex dusky; hind coxae faint dusky-yellow, femora and tibiae pale brown, tarsi white, last segment fuscous; abdomen metallic-green.

Frontovertex about 0.13 of head width, about 5 times longer than wide, at narrowest wider than diameter of front ocellus; ocellar triangle acute; lateral ocelli almost touching eye; ocelloccipital space equal to 2 ocellar diameters; gena shorter than eye; viewed in front head slightly wider than long; facial impression deep, semi-circular; prominence between antennal sockets 3 times the width of frontovertex; mandibles with 2 acute teeth and a truncation; scape slightly compressed, dilated in middle, about 4 times as long as thick; pedicel shorter than following 2 funicular segments combined; funicular segments 1-3 longer than thick, segment 4 as long as thick, 5 and 6 thicker than long; club equal to the preceding 4.50 segments combined.

Hind margin of pronotum with 15 pairs of setae; mesoscutum finely reticulate, 1.50 times wider than long; scutellum prominently reticulate, slightly wider than long, with a cluster of long, black setae; fore wings 2.50 times longer than wide; ratio of width of hyaline apex and infuscated 3 : 20; vein *sm* with 19 setae; vein *m* slightly less than 0.50 of vein *m,* distinctly longer than *pm-st* combined; marginal fringe short; tibial spur longer than metatarsus; tip of tibia with 11 pegs.

Abdomen subequal to thorax; ovipositor extends from base of abdomen.

Male : Like female except as follows : Antennae 9-segmented; antennal sockets on level of lower orbital border; fore wings hyaline; vein *m* shorter than *pm-st* combined.

Type locality : Arakonam

Host : Anomaloccus crematogasteri on *Acacia arabica*

Cheloneurus axillaris Hayat, Alam & Agarwal

(Fig. 220)

1975 *Cheiloneurus axillaris,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 55.

Female Length 1.30 mm. Body dark metallic-violet to dark brown; frontovertex, temples and face bluish-green; basal 0.33 of gena fuscous-yellow; occiput above dark brown, sides fuscous; scape except for the white triangular apical area, pedicel and funicle brown; club dark brown; thorax dark metallic-violet; axillae and metanotum pale brown; sides shining bluish-green; tergites with silvey white pubescence; scutellar tuft black; fore wings infuscated, with basal 0.33 and apical margin hyaline; fore legs pale yellow to white; middle legs white, except a small strip of dark at tip of femur above; hind legs white except tip of femur, tibia except base and tip which are brown; abdomen dark brown, first tergite greenish-blue, rest with bronzy and bluish reflections.

Head viewed above 1.50 times wider than long; frontovertex at narrowest 0.09 of head width, 7 times as long as wide; ocellar triangular acute; lateral ocelli contiguous to eye; ocelloccipital space about 2.50 times ocellar diameter; eyes slightly converging before front ocellus; gena shorter than eye; scrobes semi-circular, not carinate above, not deeply impressed; interscrobal area somewhat elevated; scape 3.50 times as long as thick, pedicel about 2 times as long as thick, shorter than following 2 funicular segments combined; first funicular segment shortest, but longer than thick; segments 2-4 and 6 longer than thick; fifth quadrate; club nearly 2 times as long as thick and a little longer than preceding 3 funicular segments combined.

Fore wings about 2.75 times longer than wide; width of apical hyaline margin and width of infuscated area in the ratio 2 : 9; veins *m pm st* ratio 15 : 2 : 4; middle tibial spur longer than metatarsus.

Abdomen slightly longer than thorax, triangular, pointed apically; ovipositor about 0.12 of abdomen.

Type locality : Lonovala (Western Ghats)

Species Incertae Sedis

Cheiloneurus quadricolor (Girault)

1915 *Cristatithorax quadricolor,* Girault, *Mem. Queensland Mus.,* 4 : 157.
1939 *Cristatithorax quadricolor,* Mani, *Indian J. Ent.,* 1 (1 & 2) : 73.

The female of this species has a superficial resemblance to *Cheiloneurus gonatopidis* Perkins, but is easily distinguished from it by the differently toothed mandibles. The following additional notes supplement Girault's description of the species.

Female : Eyes margined, dark ferruginous on vertex; ocellocular space equal to ocellar diameter; pedicel a little dark above, rest of antennae pale yellow; segments 1-3 subequal, 4-6 growing

relatively thicker; mesonotum yellow or ferruginous, anterior border narrowly margined, dark ferruginous, densely clothed with white setae; fore legs white; hind femora white, except for a dark ferruginous stripe in front in the apical 0.50.

Male : Length 1.20 mm. Body ferruginous-yellow; scape yellow basally, darker apically above; pedicel darker basally than apically; rest of antennae yellow; funicular segments subequal; mesopleura infuscated in the posterior 0.50; pronotum dark; except at base, abdomen black; fore wings obscurely infuscated behind vein *m*.

Type locality : Queensland (Australia)

Distribution : Australia, India

Host : Hyperparasite on an unknown Dryinid parasite of *Pyrilla* sp.

Diversinervus Silvestri

1915 *Diversinervus,* Silverstri, *Boll. Lab. Zool. Gen. Agr. Portici,* 9 : 30.
1915 *Cheiloneuroides,* Girault, *Mem. Queensland Mus.,* 4 : 96, 122.
1917 *Diversinervus,* Girault, *Insec. Inscit. Menst.,* 5 : 37.
1931 *Diversinervus,* Compere, *Univ. California Pub. Ent.* 5 (11) : 233-245.
1940 *Diversinervus,* Compere, *Hilgardia,* 13 (7) : 407.
1955 *Diversinervus,* Sankaran, *J. Sci. Res. Benares Hindu Univ.,* 5 (1) : 100-120.
1961 *Diversinervus,* Trjpitzin, *Ent. Rev.,* 40 (3) : 369.
1975 *Diversinervus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 39.
1979 *Diversinervus,* Krombein *et al.,* Hymen. N. America, 1 : 935.
1983 *Diversinervus,* Rosen & Alon, *Contr. Amer. ent. Inst.,* 20 : 336.

This is one of the most easily recognizable genera by the flat frontovertex, which is expanded into a frontal ledge and face meeting it in an acute angle; presence of brush of setae on mesoscutum and scutellum; mesoscutal brush sometimes absent; vein *m* short, subequal to *st;* anterior margin of subgenital plate cone-shaped in the middle, posterior margin with a deep notch in middle, sides of notch with 2 knobs, mid-longitudinal groove complete connecting the cone with the notch; outer plates of ovipositor with a V-shaped submarginal ridge along 0.67 of dorsal margin.

This genus differs from *Cheiloneurus* in the frontovertex and venation.

Type-species : Diversinervus elegans Silvestri

Key to Species

1. Frontovertex almost if not actually smooth, except for faint setigerous punctae. 3

   Frontovertex finely reticulate-punctate, appearing granular; highly metallic with golden, brassy and coppery reflections; mesoscutum dark velvety, in some lights

appearing strongly cupreous and in other lights bluish-green with admixture of violaceous — 2

2. General colour dark metallic; scape more than 2 times as long as thick; pedicel shorter than following 2 funicular segments combined; segments 1-3 longer than wide, 4-5 wider than long; club shorter than preceding 4 funicular segments combined; frontovertex about 0.20 of head width, 4.50 times as long as wide; occipital margin straight; vein *sm* with about 40 short setae — *D. madgaoensis* Hayat *et al.*

3. Frontovertex broad, 0.16-0.20 of head width, about 4 times as long as wide; occipital margin straight — 4

Fronovertex almost 0.11 of head width, 6 times as long as wide; occipital margin emarginate; funicular segments 1-3 quadrate; club as long as preceding 5 funicular segments combined; vein *m* and *pm* combined with 6 setae — *D. paradisicus* (Motschulsky)

4. Funicular segments 1-4 subquadrate; club longer than preceding 5 funicular segments combined; veins *m* and *pm* combined with 5 setae — *D. intermedius* Hayat *et al.*

Diversinervus madgaoensis Hayat, Alam & Agarwal

(Fig. 221)

1975 *Diversinervus madgaoensis,* Hayat, *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 41.

1983 *Diversinervus madgaoensis,* Rosen & Alon, *Contr. Amer. ent. Inst.,* 20 : 357.

Female : Length 2.35 mm. Body generally black; frontovertex between ocellar area, facial prominence green, anterior to median ocellus coppery-golden; gena dark green; scrobes green with some violet tinge; eyes finely pubescent; fore wings deeply infuscate, except for hyaline basal 0.30, base with some obscure brown; scape black with a small whitish area at tip; dorsal 0.50 of pedicel black, ventral 0.50 of white; funicular segments and club brown; thorax violet-blue with a white spot in front on pronotum; scutellum in and around brush pale clay-yellow; dorsum appearing green in some light; metanotum brownish-black; propodeum brownish-black, sides violet; fore femora in distal 0.50 above, tibiae except apices, femora with obilique band at distal 0.50, tibiae narrowly at proximal ends and a patch at basal 0.16 (which gradually merges into whitish part distally) brownish-black, rest whitish; hind coxae and trochanters faintly suffused with fuscous; femora except of a suboval whitish spot at tip, tibiae except whitish dorsally, spurs, metatarsus except basal 0.33 and above dark brown, rest of tarsal segments whitish, slightly suffused with dusky, rest of leg whitish; abdomen brownish-black, shiny.

Frontovertex finely reticulately punctate, with a few pale hairs, a row of hairs along orbital border; slightly less than 0.20 of head width, flat, about 4.50 times as long as wide; gena transversely reticulate; ocellar triangle acute; ocellocular space nearly equal to 0.50 ocellar diameter; in front wider than long; facial impression deep; antennal sockets close to facial margin, separated from each other by a distance more than width of frontovertex; mandibles with 2 teeth and a dorsal truncation; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape flat, expanded beneath, slightly more than 2 times as long as wide; pedicel less than 2 times as long as wide and shorter than following 2 funicular segments combined; funicular segments subequal, 1-3 longer than thick, 4-5 slightly thicker than long; club equal to the preceding 3.50 times preceding segments combined.

Hind margin of pronotum with a row of about 20 setae; hind 0.33 and whole of scutum finely reticulate, latter with dark setae in the anterior 0.75 and silvery-white setae in the posterior 0.25 and a long brush of hairs irregularly in the middle; axillae and scutellum with prominent reticulations, with brown hairs; scutellar brush black, in 2 longitudinal rows; anterior margin of pronotum concave, posterior margin convex; mesoscutum 0.33 times longer than scutellum; axillae contiguous; scutellum highly convex, with the sides declivous, slightly wider than long; mesopostphragma short, not reaching beyond apex of propodeum with apex deeply notched; fore wings about 3 times as long as wide; veins *m : pm : st* ratio 6 : 2 : 3; disc densely setose; vein *sm* with a row of about 40 short setae; *m* and *pm* together with 10 setae; marginal fringe very short; hind wings 4 times as long as wide; tibial spur equal to metatarsus, very slightly longer than third valvulae; tip of tibia and tarsal segments 1-4 with 9, 18, 5, 4 and 4 pegs respectively.

Abdomen longer than thorax; cercal plates situated at about middle; first valvifers elongate triangle shaped; ovipositor very slightly exserted.

Male : Length 1.30 mm. Differs from female as follows : Body more densely hairy than female and more intensely metallic coloured, especially on head and thorax; abdomen deep violet-blue; first tergum green; only middle coxae somewhat brown apically, rest of middle leg, all of fore and hind legs whitish, irregularly suffused with weak black.

Head 2 times as wide as long; ocellar triangle obtuse; frontovertex slightly longer than wide; antennal sockets removed from facial margin by a distance greater than length of a socket; scape 3 tmes as long as thick, shorter than club; pedicel slightly longer than thick; funicular segments longer than thick, first about 2 times as long as thick, sixth slightly less than 3 times as long as thick, club unsegmented, 4 times as long as thick, shorter than the preceding

2 funicular segments combined; funicular segments with long setae arranged in whorls; abdomen shorter than thorax and wider than long.

Type locality : Goa.

Dsitribution : India, Philippines

Hosts *Ceroplastes actiniformis* Green feeding on *Mangifera indica, Ceroplastes ceriferus* (Fab.) and *Pulvinaria* sp.

Diversinervus paradisicus (Motschulsky)

1863 *Cheiloneurus* (?) *paradisicus,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) :52.

1909 *Cheiloneurus paradisicus,* Schmiedeknecht, *Gen. Ins.,* 9 : 253.

1938 *Cheiloneurus paradisicus,* Mani, *Cat. Indian Ins.,* 23 : 93.

1961 *Diversinervus paradisicus,* Trjpitzin, *Ent. Obozr.,* 40 : 669-671.

1983 *Diversinervus paradisicus,* Rosen & Alon, *Contr. Amer. ent. Inst.,* 20 : 358.

Female : Length 1.25 mm. "Subelongatus, subparallelus, vix convexus, vix nitidus, laete rufo-testaceus, aureo-viridescens, macula occipitali fasciaque pronoto argenteo-coeruleo-ciridis, albo puberulis, altera fascia paulo anteriorori subargenteo-alba, abdomine metallico resplendes, plus minusve nigro-piceo, antennis fusco testaceis, medio rufo-testaceis, apice nigris, pedibus pallidus, albo puberulis, uguiculis nigris, oculis cinereis, alis medio subinfuscatis, capite arcuatim triangulare, postice sinuato-inciso; fronte subconvexo, submetallico resplendens, ocellis minutis, nigris, trianguliter positis, oculis magnis, oblongis, convexis sed non prominulis, antennis ad marginum posticeam insertis, capite vix longioribus clavatis, 9 articulatis, articulis basalibus nigro marginalis, scapo dimidio funiculo paulo breviorei, art. 2-do triplo breviori, boconico, 3-6 minutis, subtransversis, cylindricis, 7-9 incrassatis, dilatatis, clavo ovata formantibus; pronoto subconvexo, antice subconico attenuato, medio spina horizontali nigra, postice lato transverso-arcuatum impresso, segmentis subelevatis, mesonoto subquadrangulato, postice paulo angustato; abdomine elongato ovato, subdepresso, apice acuminato; femoribus simplicibus, angustatis, tarsis omnis 5 articulatis, alis ciliatis, stigma lato, appendiculato, dilute infuscato, axillis subdilatatis."

Type locality : Nuwara Elliya (Ceylon)

Distribution : Ceylon

Host : Lecanium coffeae Walker

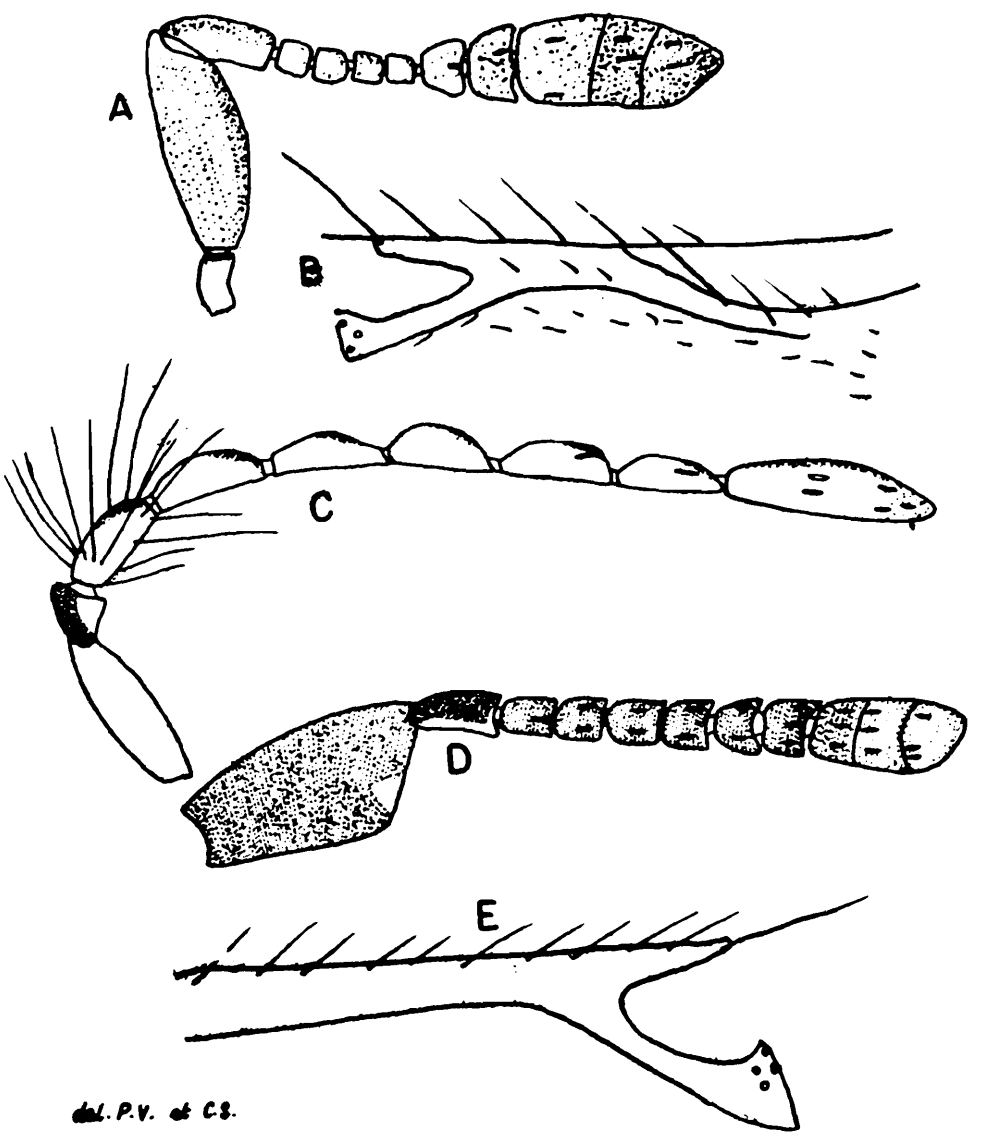

FIG. 221. A-B. *Diversinervus intermedius* Hayat *et al.*, female: A. Antennae; B. Stigmal venation; C-E. *Diversinervus madgaoensis* Hayat *et al.*, C. Antenna, male; D. Antenna, female; E. Stigmal venation, female *(Modified from* Hayat).

Diversinervus intermedius Hayat, Alam & Agarwal

(Fig. 221)

1975 *Diversinervus intermedius,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 43.

Female : Length 1.30 mm. Body yellowish-brown; head yellow, facial margin reddish-brown; scape yellow, ventral margin chocolate-brown, apex ventrally whitish; pedicel brown in apical 0.50, white below; first 4 funicular segments brown, fifth basally brown, apically yellow; sixth segment and first club segment yellow; pedicel, 2 club

segments dusky-brown, suffused with yellow; mesonotum with 2 oval brown patches in the anterior 0.33, posterior 0.25 with a metallic-bluish-green transverse band, bearing silvery-white hairs; rest of mesocutum, scutellum and axillae orange-yellow; sutures reddish-brown; fore wings infuscation similar to that of *D. elegans* Silvestri; legs whitish to pallid, with brownish suffusions as follows : dorsal margin of fore femora at distal 0.50, tibiae basally, middle femora with a patch distally, tibiae at distal end, following white ring preceded by another brown path; hind femora distally, tibiae in the middle faintly brownish-yellow; apical 0.75 of hind metatarsus, hind legs brown; abdomen shiny, greenish-blue, with coppery reflections dorsally; sides and below pale.

Frontovertex slightly shining, flat, 4 times as long as wide, 0.16 of head width; ocellar triangle acute-angled, ocellocular space slightly less than 2 ocellar diameters; ocelloccipital space slightly less than 2 ocellar diameters; scape 2.75 times as long as thick; pedicel a litttle more than 2 times as long as thick and equal to the following 3 funicular segments combined; funicular segments 1-4 subquadrate; segments 5 and 6 large; club as long as the preceding 5.50 funicular segments combined.

Propodeum fainlty shiny laterally; mesopleura ferruginous, reddish-brown behind; mesoscutal brush of 10 setae (2 hyaline, 8 dark coloured) in a single row almost in the middle; scutellum slightly longer than wide, with rounded apex; scutellar brush of 18 setae in 2 rows; the apical pair longer; vein *sm* with 7 long setae; veins *m* and *pm* with 5 setae; veins *m-st* subequal, each longer than *pm;* longest marginal fringe about 0.16 of the width of wing; middle tibial spur a little longer than metatarsus; tip of tibiae and tarsal segments 1-4 with 6, 8, 3, 3 and 3 pegs respectively.

Abdomen slightly longer than thorax, ovipositor not exserted.

Type locality : Pondicherry

Host : Chloropulvinaria psidii (Maskell)

Cheilonicetus Shafee, Alam & Agarwal

1975 *Cheilonicetus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 55.

This genus resembles *Cheiloneurus* in brush of scales at apex of scutellum and normal antennae, but differs in frontovertex, more or less angularly separated from face, vein *m* as long as *st;* tenth tergite with anterior margin concave, posterior margin rounded; subgenital plate of uniform width, without anterolateral apodemes; outer plates of ovipositor wide in distal 0.75 with broadly rounded apex, marginal inflection along 0.75 of dorsal margin; third valvulae short and blunt. It resembles *Anicetus* Howard in general shape of body, but differs in the scutellar tuft and antennae.

Type-species : Cheilonicetus daulai Shafee *et al.*

Cheilonicetus daulai Shafee, Alam & Agarwal

(Fig. 222)

1975 *Cheilonicetus daulai,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 58.

Female Length 1.46 mm. Body brown to orange-yellow; head yellowish-brown; scape below, pedicel above and club dark brown, remaining portion yellowish; fore wings infuscated, except basal 0.33 hyaline; fore legs uniformly orange-yellow. except an infuscated band

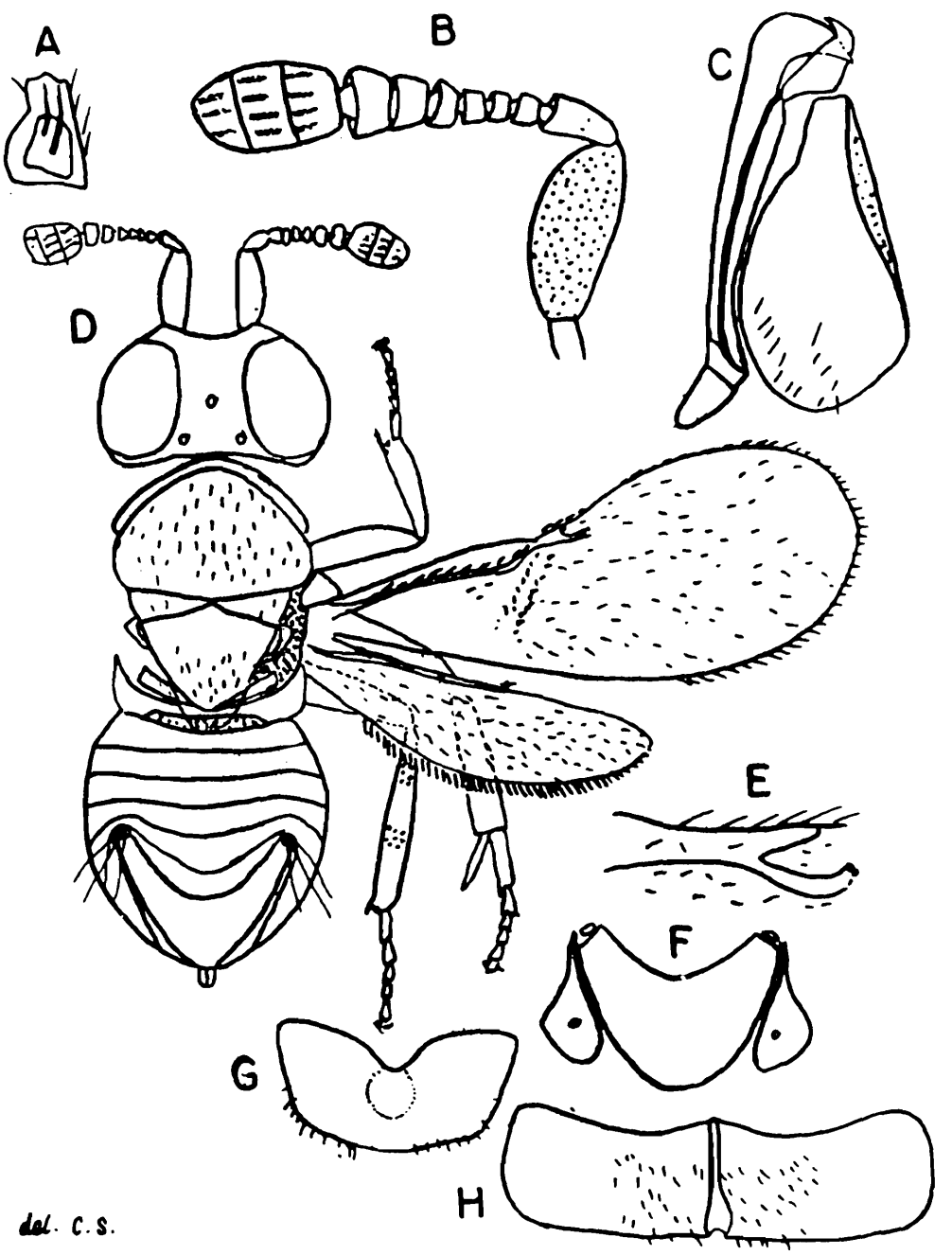

FIG. 222. *Cheilonicetus daulai* Shafee *et al.,* female : A. Mandible; B. Antenna; C. Genitalia; D. Body entire; E. Stigmal venation; F. Apex of abdomen; G. Pronotum; H. Subgenital plate. *(Modified from* Shafee).

basally on tibiae; middle legs uniformly orange-yellow, except 2 infuscated bands on tibiae; hind legs uniformly orange-yellow, except 2 infuscated bands on tibiae; abdomen orange-yellow.

Head wider than long in facial view; width of frons between eyes less than 0.33 of head width; frontovertex slightly less than 2 times longer than wide; ocellar triangle equilateral; ocellocular and ocelloccipital spaces less than ocellar diameter; gena equal to eye; antennae inserted just above oral margin; prominence between antennal sockets slightly more than the width of frontovertex; mandible with 2 teeth and a truncation; maxillary palpi with 4 and labial palpi 3 segments respectively; scape dilated, slightly more than 2 times longer than thick; pedicel about as long as following 3 funicular segments combined; funicular segments 1-6 gradually thickened distad, thicker than long; first funicular segment slightly thicker than long, sixth slightly less than 2 times thicker than long; club 3 segmented, less than 2 times longer than thick, distinctly shorter than funicle.

Thorax reticulate, with dense short setae; axillae contiguous; scutellum longitudinally reticulate, with 16 stout scales apically; fore wings 2.50 times longer than wide; costal cell broad; vein *sm* long, with 13 black setae, vein *m* shorter than *sm,* longer than *pm* and about as long as *st;* marginal fringe short; hind wing hyaline, slightly more than 4 times longer than wide; marginal fringe short; 3 frenal hooks; middle legs with 9 stout pegs on tip of tibiae; tibial spur shorter than metatarsus.

Abdomen subequal to thorax; ovipositor arises from middle of abdominal venter, slightly protruded.

Type locality Guntur, Tenali

Host : Anomalococus crematogasteri Green on *Acacia arabica* Willd.

Prochiloneuroides Hayat, Alam & Agarwal

1975 *Prochiloneuroides,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 61.

This genus resembles *Prochiloneurus* Silv. and *Neoprochiloneurus* Vig., but without scutellar tuft, abdomen apically truncated; vertex and frons not horizontal; antennae not greatly flattened; scape flattened; pedicel longer than the following segment; funicle with 6 segments; wings infuscate in the middle, hyaline basally and apically; vein *m* long, *pm* shorter than *st;* mandible tridentate; ovipositor exserted.

Type-species : Prochiloneuroides clavatus (Compere)

KEY TO SPECIES

1. Scape expanded below, 2.50 times as long as wide; club longer than funicle and pedicel combined; funicular segments transverse; body dark metallic; middle tibial spur longer than metatarsus. .. *P. comperei* (Compere)

Scape narrow, more than 5 times as long as wide; club slightly shorter than funicle; funicular segments, except first, slightly wider than long; body not completely metallic; middle tibial spur slightly shorter than metatarsus *P. albifuniculus* Hayat *et al.*

Prochiloneuroides comperei (Compere)

(Fig. 223)

1938 *Prochiloneurus clavatus,* Compere, *Bull. ent. Res.,* 29 : 334-337.

1970 *Prochiloneurus comperei,* Viggiani, *Bol. Soc. ent. Ital.,* 102 : 68. (new name for *clavatus,* preoccupied in *P. (=Achrysopophagus) clavatus* (Girault))

1975 *Prochiloneurus clavatus,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 61.

Female : Length 1.60 mm. Body dark metallic; scutum faintly bluish-green; with numerous, short, silvery-white setae; scutellum green, finely punctate like frontovertex, strongly convex, with sparse silvery to cupreous setae, with a pair of very fine, semi-erect, black setae apically; polished metallic-green at apex; axillae greenish-black, separated; tegulae bluish-black basally, brown apically; collar of pronotum green, coarsely reticulate; frontovertex finely punctate; part of face between orbits and scrobes bluish-green, finely punctate, with silvery white setae; temples narrow, bluish-green; cheeks black, except near eye; scrobes and rounded ridge between antennae partly violaceous; scape mostly black, slightly testaceous apically; first 3 and sixth funicular segment black or partly so, fourth and fifth white; club black; mesopleura partly violaceous; abdomen black with metallic reflections; ovipositor exserted, testaceous, tipped black; fore legs mostly black with tips of coxae and femora and tibiae at distal ends white; tarsi testaceous grading to dusky apically; middle legs largely white, femora with a broad black band on apical 0.33 and tibiae with a similar band on basal 0.33; tarsi and tibial spur white; hind legs mostly black, ends of tibiae whitish, tarsi testaceous to dusky.

Fore wings length : width ratio 27 : 11, much wider than in other species; vein *sm* slightly recurved; infuscated pattern similar to that of *Prochiloneurus pulchellus.*

Ovipositor about 0.50 of abdomen; sides of seventh tergite enlarged and instead of being lateral as in species with a pointed abdomen, in a dorsoventral position, as in species of *Achrysopophagus.*

Male : Head bluish-green; frontovertex finely punctate, as wide as long and almost 0.50 of head width; ocellar triangle equilateral; ocellocular space slightly less than ocellar diameter, equal to ocelloccipital space; antenna inserted close together, on level of lower oribital border; scape slightly thickened, pale yellowish-white; funicular segments faintly brown with verticillate hairs; mesoscutum bluish-green with violaceous and cupreous reflections and with silvery white setae; scutellum green to cupreous, finely punctate, in the middle with sparse, long setae; tegulae testaceous; mesopleura violaceous; sides of propodeum bluish-green; abdomen strongly metallic; middle legs white except for coxae and a faint narrow band bear base of tibiae; hind femora narrowly at basal end, tibiae widely at basal end and distal 0.33 white, tarsi concolorous with apical ends of tibiae; fore legs similar to hind legs except for femora tipped with white at distal ends; fore wings hyaline, 2 times as long as wide; cilia very fine and faint.

Type locality : Tanganyika (Africa)

Distribution : Africa; India : Nellore, Kancheepuram, Nabha (Punjab)

Hosts : Nipaecoccus, Icerya formicarium in India; *Pseudococcus perniciosus* on coffee and *P. filamentosus* in Africa.

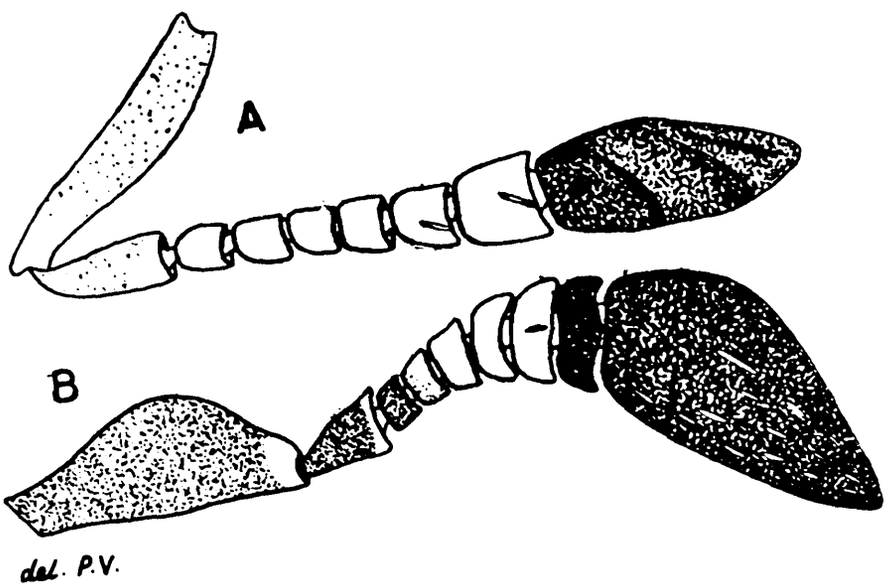

FIG. 223. A. *Prochiloneuroides albifuniculus* Hayat *et al.*, female : Antenna; B. *Prochiloneuroides comperei* (Compere), female : Antenna.

Prochiloneuroides albifuniculus Hayat, Alam & Agarwal

(Fig. 223)

1975 *Prochiloneuroides albifuniculus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 62.

Female Length 1.50 mm. Body brown; frontovertex and ocellar area suffused brown, with metallic bluish-green lustre, rest of head orange-yellow; face and gena paler; with silvery-white setae; radicle pale brown; scape except apex and pedicel golden-yellow; tip of scape and funicular segments white; club black; pronotum with a brown patch in the middle; posterior 0.66 of mesoscutum metallic-green with purple lustre, anterior 0.33 yellow, suffused dusky, rest of thorax yellow; shiny part of mesoscutum with silvery-white setae; axillae and scutellum with white setae; fore wings hyaline with an infuscated patch in middle; hyaline apical area distinguished into 2 parts, proximal to infuscation with transparent setae and distad with dark setae; legs yellow, whitish in some parts; middle femora with a faint brown line outside at distal 0.50; middle tibiae with a similar mark on proximal 0.50; abdomen faintly shiny bluish-green above, pallid at sides and below; first tergum more shining.

Head viewed above 1.50 times wider than long; reticulate; frontovertex about 0.20 of head width, nearly 4 times longer than wide; ocellar triangle acute; lateral ocelli contiguous to eye; ocelloccipital space 4 times ocellar diameter; eyes large, oval, gena shorter than eye; mandibles tridentate; scrobes shallow; frontal edge not carinate; antennal sockets situate close to facial margin; scape about 5.50 times as long as thick; pedicel shorter than the following 3 funicular segments combined; first funicular segment longer than thick, second quadrate, other segments thicker than long; club as long as the preceding 5.50 segments combined.

Fore wings 3 times as long as wide; vein *sm* with 8 setae; vein *m* long, not touching anterior wing margin, about 0.50 of *sm; st* 0.25 longer than *pm;* marginal fringe short; middle tibial spur slightly shorter than metatarsus; tip of tibia and tarsal segments 1-4 with 10, 22, 7, 5 and 4 pegs respectively; hind legs with a dusky strip on distal 0.50 of femora and a similar strip on tibiae at basal 0.50

Abdomen slightly longer than thorax; cercal plates situated a little basal to middle of abdomen; ovipositor exserted to more than 0.50 of the length of abdomen.

Type locality : Lakhimpur (U.P.)

Distribution : Bareilly (U.P.), Mandi (Himachal)

Hosts : Centrococcus insolitus (Green) and *Nipaecoccus* sp.

Prochiloneurus Silvestri

1915 *Prochiloneurus,* Silvestri, *Boll. Lab. Zool. Agric. Portici,* 9 : 350.
1915 *Achrysopophagus,* Girault, *Mem. Queensland Mus.,* 4 : 89, 122.
1919 *Prochiloneurus,* Mercet, *Bol. Soc. Espan. Hist. Nat.,* 19 (9-10) : 473-474.
1923 *Achrysopophagus,* Gahan *et* Fagan, *Bull. US nat. Mus.,* 124 : 6.
1929 *Achrysopophagus,* Mercet, *Eos.,* 5 : 359.
1930 *Achrysopophagus,* Mercet, *Bull. Soc. ent. Egypt.,* 4 : 224.

1938 *Prochiloneurus,* Compere, *Bull. ent. Res.,* 29 (3) : 325-327.
1951 *Achrysopophagus,* Peck, *US Dept. Agric. Monogr.,* 2 : 498.
1952 *Prochiloneurus,* Risbec, *Mem. Inst. Sci. Madagascar.,* (E) 2 : 21.
1952 *Achrysopophagus,* Nikolskaya, *Chalcids faune USSR,* 454.
1953 *Achrysopophagus,* Ferrière, *Mitt. schweiz. ent. Ges.,* 26 (1) : 12.
1953 *Achrysopophagus,* Kerrich, *Bull. ent. Res.,* 44 : 798.
1955 *Achrysopophagus,* Erdös *et* Novicky, *Beitr. Ent.,* 5 (1-2) : 174.
1957 *Prochiloneurus,* Hoffer, *Acta Soc. ent. Cechosl.,* 54 (4) : 329-349.
1961 *Achrysopophagus,* Alam, *XI Intern. Kongr. Ent. Wien.,* 1 : 235.
1963 *Achrysopophagus,* De Santis, *Ann. Com. Invest. Cient. Prov. Buenos Aires,* 4 : 358.
1963 *Achrysopophagus,* Tachikawa, *Mem. Ehime Univ.,* (6), 9 (1) : 109.
1964 *Achrysopophagus,* Peck *et al., Mem. ent. Soc. Canada,* 34 : 70.
1964 *Achrysopophagus,* Erdös, *Fauna Hung.,* 73, *(Chal.)* 3 : 304.
1966 *Prochiloneurus,* Viggiani, *Boll. Lab. Ent. Agr.* "F. Silvestri", *Portici,* 24 : 91.
1968 *Prochiloneurus,* Trjpitzin, *Trudy Vses. Ent. Obsch.,* 52 : 116-122.
1971 *Prochiloneurus,* Tachikawa, *Trans. Shikoku ent. Soc.,* 2 (2) : 42.
1979 *Prochiloneurus,* Krombein *et al.,* Hymen. N. America, 1 : 936.

Female : Eyes large, sparsely pubescent; frons long; face excavate between antennae; antennae inserted near the mouth, with 11 segments; with flat scape, pedicel, funicle with 6 segments and large, stout obliquely truncate, compressed club equal to or longer than funicle; mandible tridentate, without truncature; maxillary palpi with 4 and labial palpi with 3 segments.

Mesonotum with slight pubescence, axillae short, contiguous; scutellum dull, flat semi-oval, broadly rounded apically with a tuft of bristles; wings wide, infuscate in part; vein *m* longer than thick, *pm* much shorter than *st,* which latter is very short, *sm* with a curvature in the apical 0.33; hind tibial spur double.

Abdomen suboval, a little wider than thorax, truncated apically; ovipositor exserted; outer plates reflexed upward to overlap tip of abdomen; paratergites usually present.

Type-species : Prochiloneurus pulchellus Silvestri

KEY TO SPECIES

1. Scape dilated	2
Scape more or less cylindrical	3
2. Body golden-yellow, posterior 0.66 of mesonotum brown; dark brown band connecting antennal sockets with end of occipital margin and running obliquely posterior to eye, 2 such bands in combination with narrow dark brown occipital margin form a horse-shoe-shaped band of head; pedicel, first and below second funicular segments dark brown; pedicel 2.50 times longer than wide	*P. latiscapus* (Compere)

	Body dark metallic; thorax with bluish, abdomen with greenish reflections; head without a horse-shoe-shaped band; pedicel 1.50 times longer than wide	*P. metallicus* (Agarwal)
3.	Body black, with metallic-bluish or greenish reflections	4
	Body yellow, except dark mesoscutum and abdomen	7
4.	Funicle white or with segments black and white	6
	Funicle uniformly dark brown; body violet, mesonotum silvery, axillae bronzy, scutellum and propodeum metallic-green, abdomen violet-blue, very dark; ovipositor a little less than 0.50 the length of abdomen	5
5.	Middle tibial spur longer than metatarsus	*P. aegyptiacus* (Mercet)
	Middle tibial spur equal to metatarsus.	*P. valparianus* (Mani & Kaul)
6.	Mesoscutum finely punctate; funicular segments 1-5 yellow, sixth dark; pedicel longer than following 2 funicular segments combined; club longer than funicle; fore femora yellow; middle tibial spur equal to metatarsus	*P. indicus* Shafee *et al.*
	Mesoscutum impunctate; funicle completely white; pedicel equal to following 2 funicular segments combined; club equal to funicle; fore femora dark; middle tibial spur longer than metatarsus.	*P. albifuniculus* Shafee *et al.*
7.	Pedicel more than 2 times longer than thick; first funicular segment 1.50 times longer than thick, third as long as thick, 4-6 slightly thicker than long; middle tibial spur longer than metatarsus; tip of middle tibia with a row of 6 pegs.	*P. testaceus* Agarwal
	Pedicel less than 2 times longer than wide; first funicular segment slightly longer than thick, segments 2-6 distinctly thicker than long; middle tibial spur equal to metatarsus; tip of middle tibial with a row of 3 pegs	*P. hayati* Shafee *et al.*

Prochiloneurus latiscapus (Compere)

(Fig. 224)

1938 *Cheiloneurus latiscapus,* Compere, *Bull. ent. Res.,* 29 : 329.

1961 *Achrysopophagus insolitus,* Alam, *Proc. XI internat. Congr. Ent.,* 1 : 236.

1972 *Cheiloneurus comperei,* Hayat, *Acta ent. Boh.,* 69 : 212.

1975 *Prochiloneurus insolitus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 53.

Female : Head golden-yellow, dark brown bands connecting toruli with corresponding ends of occipital margin obliquely and posterior to eye ring, form a horse-shoe-shaped dark brown band; a dark brown patch below eye; oral margin dark brown; segments

1-3 whitish, fourth reddish-brown; scape yellow, brown below; pedicel entire, first segment and second segment below dark brown; rest of second and third, fifth segments whitish; sixth segment and club dark brown; pronotum black in the middle, yellow at sides and along hind margin, front margin notched in the middle, pleura and axillae golden-yellow, with apical border of scutellum black; fore wings smoky except hyaline basically and apical 0.25; horizontal hyaline patch in the middle of smoky area and another vertical narrow hyaline streak just beyond vein *pm;* fore legs yellow with some very fine black markings along margins of femora, tibiae; metatarsus dark borwn; middle legs yellow with dark brown patch on base and tip of femora and tibiae respectively; hind coxae and trochanters light yellow; femora and tibiae yellow with an oblique patch on distal 0.50 and in the middle of femora and tibiae respectively; metatarsus dark brown; abdomen metallic-bluish-black; third valvulae lightly yellow.

Head longer than wide; frontovertex narrow, 1.50 times longer than wide; eyes almost 2 times as long as wide; ocellar triangle isosceles; lateral ocelli almost contiguous to eye; gena shorter than eye; antennae inserted close to mouth border; scrobes carinate; mandibles tridentate with a pair of intradental mandibular glands; maxillary palpi with 4 segments; segments 1-3 longest; labial palpi with 3 segments, third being longest; scape laminate about 3 times longer than thick; longer than club; pedicel nearly 2 times as long as thick, longer than funicular segment; funicular segments 1-3 longer than thick; fourth as long as thick, fifth and sixth thicker than long; club with 3 segments, obliquely truncated apically, 2.50 times as long as thick and as long as funicle.

Metanotum and propodeum infumate; mesoscutum about 2 times as wide as long, slightly longer than scutellum; axillae broadly contiguous; apex of scutellum with a weakly developed hair tuft; metanotum narrow, band-like; propodeum narrow in the middle; fore wings about 3 times as long as wide; costal cell broad; vein *sm* very long, curved in apical 0.33; vein *m* longer than broad; vein *pm* short, nearly 0.16 of *m;* vein *st* 2 times as long as *pm* and about 0.33 of *m;* marginal fringe very short; fore tibial spur strong, curved and bifurcate; middle tibial spur almost as long as metatarsus; 2 short stout pegs on tip of tibiae; metatarsus with 2 rows of 13 pegs each, second, third and fourth tarsal segments with 9, 7 and 5 pegs respectively; hind coxae with 4 long setae along the margin of apical 0.50 of femora with 6 long setae along inner margin of apical 0.50; tibial spur short.

Abdomen longer than thorax; rounded apically; ovipositor nearly 0.50 of abdomen; subgenital plate with oblique anterolateral apodemes, posteririor margin with a very small notch, a pair of ridges obliquely extending from the notch; outer plate of genitalia narrow at base, expanded at apex, dorsal margin thickened; first valvifers

oblong, inner articular knob more prominent than outer one; second valvifers gradually narrowed with third valvulae immovably articulated, latter rounded at apex and elongated.

Type locality : South India

Distribution : Nellore, Arakonum, Quilon.

Hosts : Rastrococcus iceryoides (Green), *Dysmicoccus* sp., *Nipaecoccus* sp. etc.

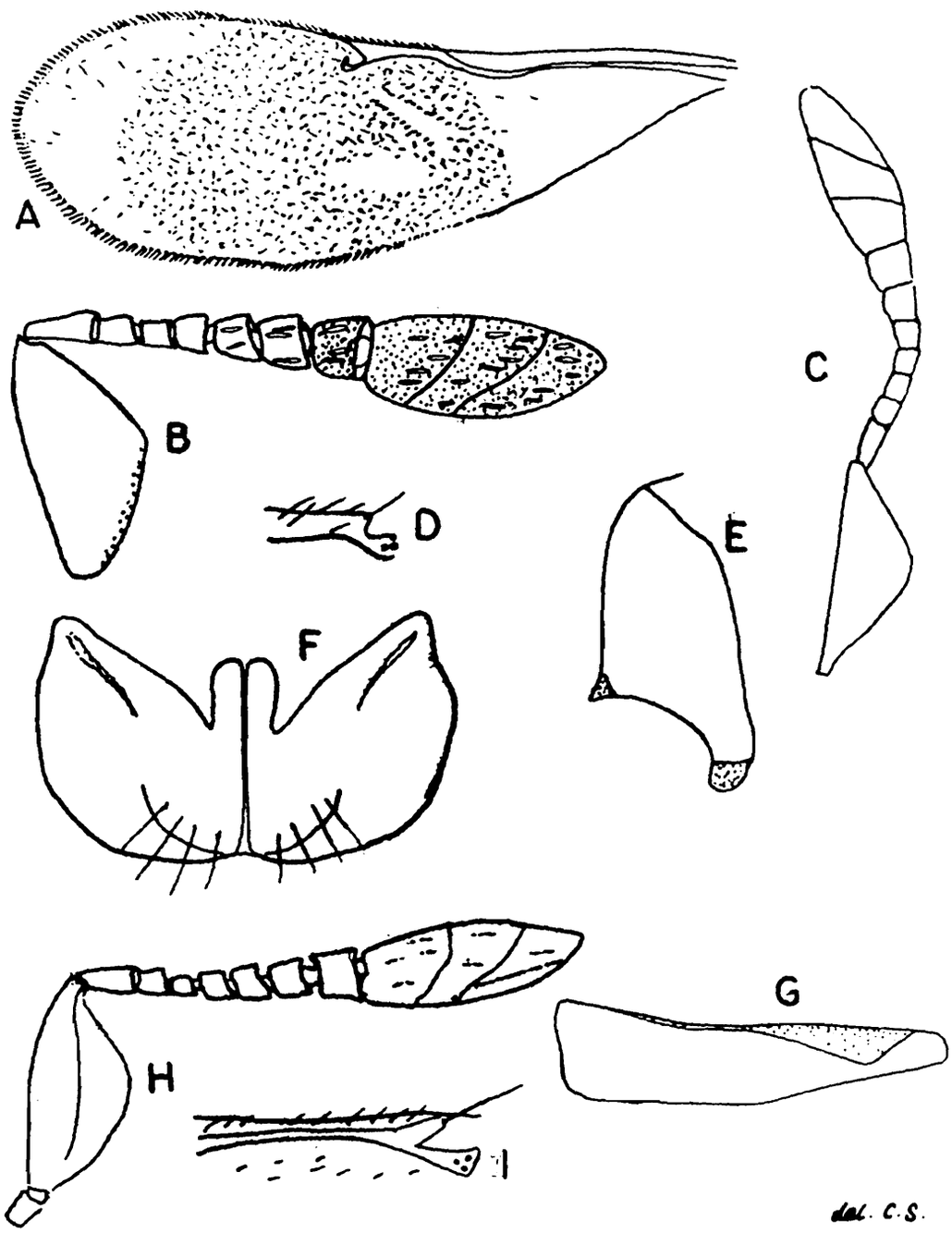

FIG. 224. A-G. *Prochiloneurus latiscapus* (Compere), female : A Fore wing; B. Antenna; C. Antenna side view; D. Stigmal venation; E. First valvifer; F. Subgenital plate; G. Outer plate ovipositor; H-I. *Prochiloneurus metallicus* (Agarwal), female; H. Antenna; I. Stigmal ventation. *(Modified from* Agarwal).

Prochitoneurus metallicus (Agarwal)

(Fig. 224)

1956 *Archysopophagus metallicus,* Agarwal, *Acta Hymen,* 2 (2) : 66.

Female Length 1.50 mm. Head dark brown, slightly metallic; eyes dark, bare; scape light brown in greater part, black along the vertical margin, whitish at apex; pedicel and first 2 funicular segments long, brown, segments 3-5 whitish, sixth segment and club dark brown; thorax metallic-brown for greater part, with bluish reflections on scutum, propodeum and mesopleura; prosterna light brown; wings hyaline; fore legs uniformly light brown, with margins of femora, tibiae light brown; femora and tibiae yellow, femora at apex and tibiae at base brown, tarsal segments concolorous; hind legs uniformly light brown, with coxae and metatarsus brown, abdomen strongly metallic reddish-green.

Frontovertex narrow, less than 2.50 times longer than wide, narrower than width of scrobes; eyes large, ocellar triangle isosceles; ocelloccipital space 2 times ocellar diameter; lateral ocelli close to eye; gena equal to eye; antennae inserted close to facial rim; scrobes deep, carinate laterally, converging above; interscrobal ridge prominent; mandibles with 2 teeth and a truncation; maxillary palpi with 4 and labial palpi with 3 segments; scpae flattened, laminate, slightly more than 2 times as long a thick; pedicel 1.50 times longer than thick, equal to following 2 segments combined; first funicular segment longer than thick, second as long as thick, remaining segments thicker than long; club 3 segmented, slightly shorter than scape, obliquely truncated at apex, more than 2.50 times longer than thick.

Pronotum wide, narrow in the middle, anterior margin deeply notched in the middle; scutum flat; axillae narrowly contiguous; scutellum slightly elevated at apex with some long scale-like setae; metanotum narrow, band-like; propodeum broad, slightly expanded on sides; fore wings more than 3 times longer than wide; infumate for greater part, except from base, vein *sm* and at the apical margin; anterior to veins *st* and *pm* and horizontally in the middle of disc, hyaline; vein *sm* long, curved in apical 0.25; vein *m* long, 2 times *st* and *pm* combined; veins *pm* and *st* short; vein *pm* about 0.50 of *st;* marginal fringe short, spaced by a distance equal to 0.25 length of a fringe; hind wings less than 4 times longer than wide; marginal fringe short, more than 0.33 of wing width and spaced by a distance equal to 0.25 length of a fringe; middle tibial spur longer than metatarsus; tip of tibia with a row of 9 pegs; metatarsus, tarsal segments 2-4 with 7, 5 and 4 pegs respectively in 2 rows of 15 each.

Abdomen as long as thorax, truncated apically; cercal plates start near base; ovipositor slightly less than 0.50 of abdomen.

Type locality : Aligarh

Host : Chionaspis sp. on *Rhynchosia mimosa* L.

Prochiloneurus aegyptiacus (Mercet)

(Fig. 225)

1929 *Achrysopophagus aegyptiacus,* Mercet, *Eos,* 5 : 360.

1938 *Achrysopophagus aegyptiacus,* Compere, *Bull. ent. Res.,* 29 : 334.

1975 *Prochiloneurus aegyptiacus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 52.

Female : Length 1.35 mm. Head metallic-violet, frontovertex bronzy; prepectus and propleura purplish-golden; mesopleura brownish-red; scutellum and metanotum metallic-green; abdomen violaceous-black; scape yellow with dorsum brown; funicle and club black with violaceous reflections; wings hyaline in basal 0.33, otherwise infuscated, with a very dark triangular space behind vein *sm,* apical border hyaline; hind wings completely hyaline.

Head suboval, longer than wide, truncated below, finely striate in the middle and punctate towards cheeks; cheeks as long as eyes; frontovertex narrow; ocelli in an acute angle, lateral ocelli contiguous with eye; interocellar space a little more than ocellar diameter; eyes oval, slightly hairy; scrobes short; antennae inserted at mouth border; scape cylindrical, slightly thickened in basal 0.33; pedicel slightly longer than 2 succeeding funicular segments; first funicular segment longer than thick; second funicular segment little shorter than first; third funicular segment as long as thick; funicular segments 4-6 successively thicker than long; club obliquely truncate at apex, as long as and much thicker than funicle, with 3 segments.

Scutum covered with pubescence, golden in anterior 0.50 and silvery posteriorly; scutellum finely punctate with golden setae; apical tuft strong and black; wings long and narrow; vein *sm* strongly curved on the apical 0.33; vein *m* very long, slightly less than *sm;* vein *pm* short, equal to *st;* femora and tibiae slightly compressed; spur of intermediate tibiae equal to metatarsus.

Abdomen as long as thorax, slightly truncate at apex; ovipositor exserted slightly less tha 0.50 length of abdomen.

Type locality : Wadium Alag (Egypt)

Distribution : Africa; India : Guntur

Host : Nipaecoccus vastator (Mask.)

Prochiloneurus valparianus Mani & Kaul

(Fig. 225)

1974 *Prochiloneurus valparianus,* Mani & Kaul, *Mem. School Ent.,* 3 : 66.

Female : Length 1.50 mm. Body black to brownish-black, head reddish-brown, ocellar area and occiput black; scape, pedicel and funicular segments yellowish-brown, club dark brown; legs yellowish-brown, wing base and the apical margin white, rest blackish-brown; veins brown.

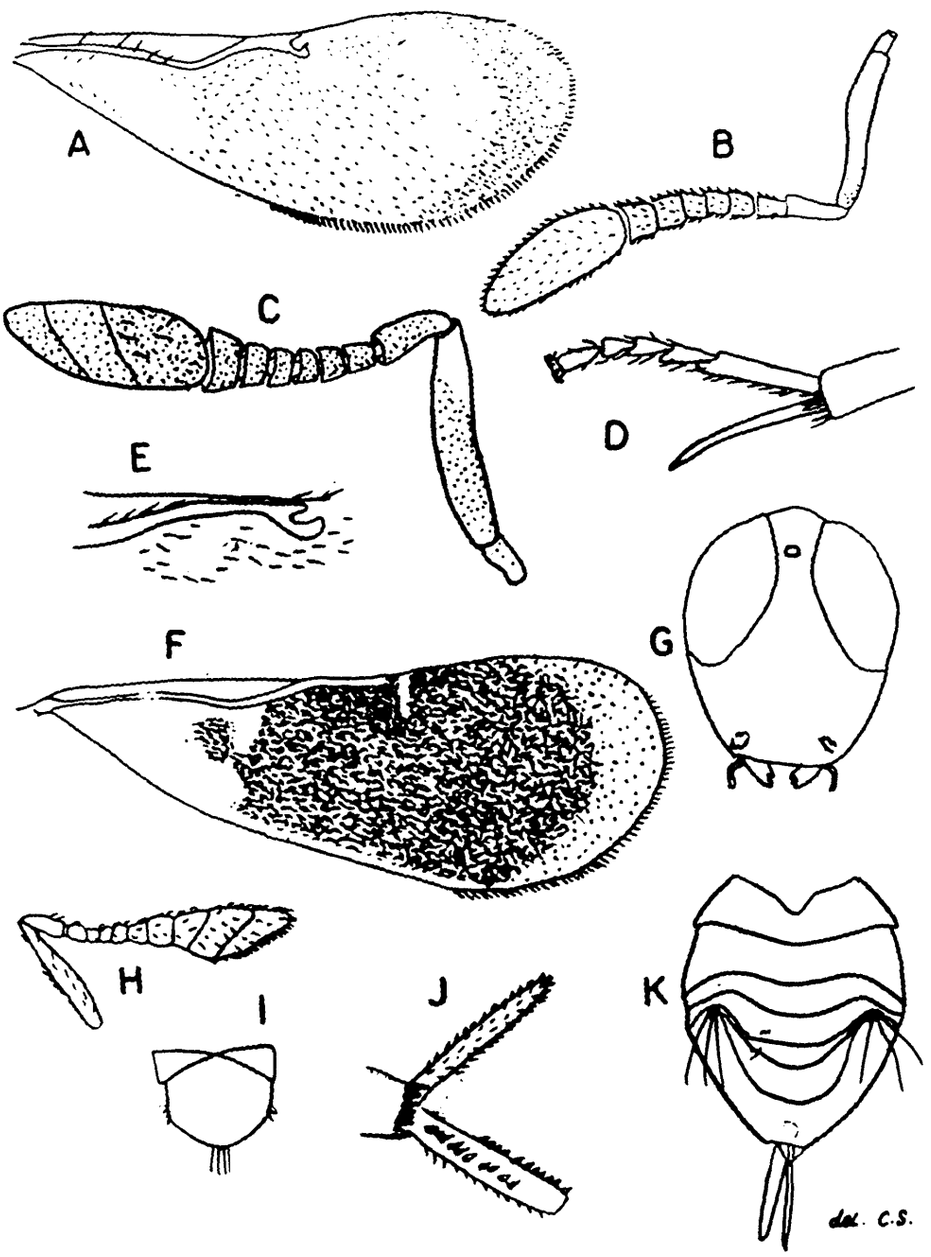

FIG. 225. A-E. *Prochiloneurus aegyptiacus* (Mercet), female : A. Fore wing; B. Antenna; C. Antenna lateral; D. Middle leg; E. Stigmal venation; F-K. *Prochiloneurus valparianus* Mani & Kaul, female : F. Fore wing; G. Head in front view; H. Antenna; I. Scutellum and axillae; J. Middle tibial spur; K. Abdomen.

Head from front with fine reticulate microsculpture, width to length 100 : 124, interorbital space at middle of face 0.34 of head width; eyes pubescent, strongly converging above; maxillary palpi with 4 segments, first segment 2 times as long as thick, second

segment 0.70 of the first, third subequal to the second, fourth longest and equal to the preceding 3 segments combined; mandible tridentate, gena without carina, 0.75 of eye; antenna inserted close to mouth, segments 12 : 1.1.1.6.3; scape long, slender, 0.75 times as long as thick, pedicel 0.30 of scape; annellus small; first funicular segment 0.50 of pedicel, second 0.65 of the first, segments 3-4 subequal to the second, fifth segment 1.50 times the fourth, sixth 1 17 times the fifth; club obliquely truncate apically, flattened, equal to preceding 5 segments combined.

Thorax with fine reticulate microsculpture, mesonotum length to width 100 : 58, with fine scattered setae; scutellum as wide as long, with a tuft of long setae subapically; pronotum smooth, width equal to about 3 times the length; fore wing length to width 100 : 38, veins *sm : m : pm : st* ratio 260 : 100 : 18 : 24; speculum complete; fore to hind wing 100 : 83; fore femur 4 times as along as thick; tibia 0.80 of femur, spur almost equal to metatarsus; tarsus equal to tibia; middle femur long, uniformly thick, about 7 times as long as thick; tibia 1.10 times femur, tip with a circlet of sharp teeth, spur subequal to meatarsus, metatarsus 0.50 of tarsus, with a double series of 12 teeth beneath, second tarsal segment 0.50 of metatarsus, third 0.63 of the second, segments 4-5 subequal to the third; hind femur about 0.80 of mid femur; tibia a little longer than femur, spur about 0.50 of metatarsus; tarsus about 0.80 of tibia; metatarsus about 0.33 of tibia and 0.66 of tarsus.

Abdomen equal to thorax; ovipositor 0.50 of abdomen.

Type locality : Anamalai Hills : Valparai

This species comes somewhat close to *Prochiloneurus nagasakinensis* (Ishii), but is readily distinguished by antennae without white segments and by the apical hyaline area of fore wings being much narrower.

Prochiloneurus indicus Shafee, Alam & Agarwal

(Fig. 226)

1975 *Prochiloneurus indicus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 49.

Female : Length 1.30 mm. Body dark brown, with metallic-green reflections; antennae yellow except dark brown pedicel, sixth funicular segment and club; thorax dark brown with slight metallic-green reflections; silvery band on posterior margin of mesoscutum; fore wings infuscate except hyaline basal 0.33 and apical border; hind wings hyaline; fore legs uniformly orange-yellow; middle coxae, tip of femur and basal 0.75 of tibiae infuscate, rest of legs orange-yellow; hind coxae, femora and tibiae infuscate, tarsal segments 1-4 orange-yellow; abdomen intense dark brown.

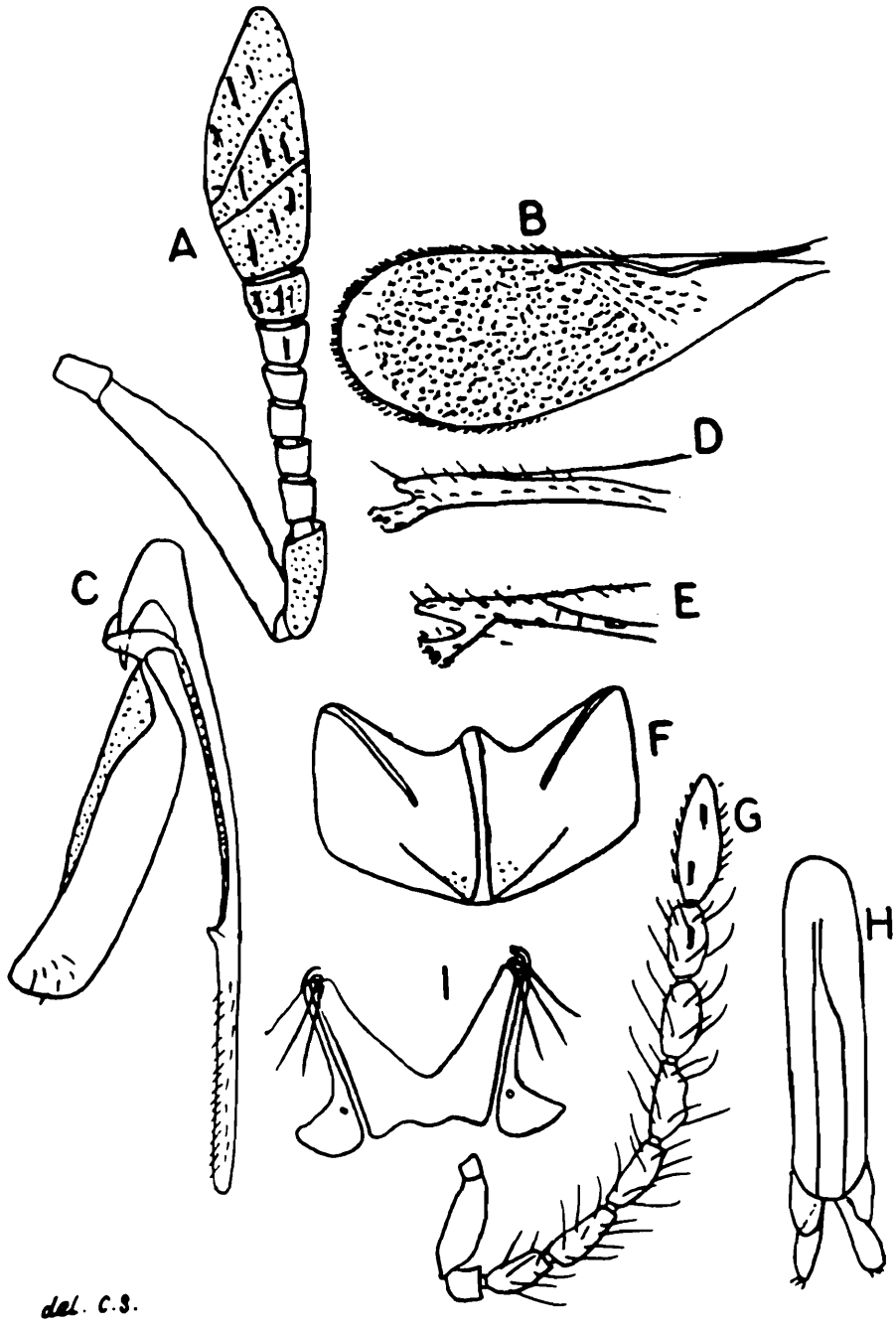

FIG. 226. *Prochiloneurus indicus* Shafee *et al.* A. Antenna, female; B. Fore wing, female; C. Genitalia, female; D. Stigmal venation, female; E. Stigmal venation, male; F. Subgenital plate, female; G. Antenna, male; H. Genitalia, male; I Apex of abdomen, female *(Modified from* Shafee).

Head in front distinctly longer than wide; frontovertex more than 2.50 times longer than wide; ocellar triangle acute angled; lateral ocelli subcontiguous to eye; ocelloccipital space 2 times ocellar

diameter; scrobes shallow, more or less semi-circular; gena equal to eye; prominence between toruli slightly more than 2 times width of frontovertex; antennae inserted very close to oral margin; mandibles tridentate, with rounded apices; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape elongate, about 6 times longer than thick; pedicel longer than following 2 funicular segments combined; first funicular segment slightly longer than thick; second slightly thicker than long, third as long as thick, segments 4-6 distinctly thicker than long; club-segmented, longer than funicle, obliquely truncated apically.

Mesonotum punctate; front margin of pronotum with a shallow notch in the middle; hind margin slightly curved; scutum 1.50 times wider than long; scutellum about as long as wide, with a tuft of setae at apex; fore wings slightly less than 3 times longer than wide; vein *sm* long, curved in apical 0.33, vein *m* very long, distinctly longer than veins *pm-st;* hind wings slightly less than 4 times longer than wide; middle tibial spur subequal to metatarsus; tip of tibia with 7 stout pegs.

Abdomen slightly shorter than thorax; ovipositor orange yellow, less than 0.50 of abdomen; subgenial plate with oblique anterolateral apodemes; outer plates of ovipositor narrow at base, expanded at apex, dorsal margin thickened; third valvulae long and narrow.

Male : Differs from female as follows : head in front slightly wider than long, prominence between toruli, slightly less than 0.33 of width of frontovertex; antennae inserted on lower orbital border; with 9 segments; pedicel as long as thick, distinctly shorter than first funicular segment; funicle 6-segmented, segments longer than thick, with long verticillate hairs; club entire, shorter than the preceding 2 funicular segments combined, with short setae; fore wings hyaline, vein *m* slightly longer than veins *pm* and *st* separate; scutellum without a tuft.

Type locality : Coimbatore

Host : Nipaecoccus vastator (Mask.)

Prochiloneurus albifuniculus Shafee, Alam & Agarwal

(Fig. 227)

1975 *Prochiloneurus albifuniculus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 52.

Female : Length 1.30 mm. Body dark brown with metallic reflections; radicle, basal 0.50 of pedicel and club dark brown; basal 0.75 of scape yellowish-brown; rest of antenna white; thorax uniformly dark brown, with metallic reflections; fore and hind coxae, trochanters, femora, basal 0.50 of tibiae dark brown, rest whitish;

middle coxae, trochanters, distal 0.66 of femora, basal 0.50 of tibiae dark brown, rest whitish.

Between antennal sockets about 3 times the width of frontovertex; mandibles with acute teeth; scape 5 times longer than thick; pedicel about equal to the following 2 funicular segments combined; funicular segments 1-2 longer than thick; segments 3-6 thicker than long and gradually thickened apically; club equal to funicle. Scutum about 12 times as wide as long; tip of tibia with 9 stout pegs; tibial spur longer than metatarsus.

Type locality Karnul, Gudalur

Host *Nipaecoccus vastator* (Mask.)

Prochiloneurus testaceus (Agarwal)

(Fig. 227)

1965 *Achrysopophagus testaceus,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 68.

1975 *Prochiloneurus testaceus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.*(Zool.) 10 : 53.

Female Length 1.22 mm. Head shagreened, orange-yellow with black eyes, vertex a little mixed with fuscous; scape light orange on basal 0.75; pedicel darker near base and along the ventral margin, rest of scape, pedicel and entire funicle white, club black; thorax slightly metallic, yellowish-orange on greater part with anterior margin of mesoscutum, apex of scutellum and sides of propodeum red; pronotum orange along anterior margin with a brown triangle in the middle, dusky in the rest, hind wings hyaline; fore legs whitish with tip of femora and basal 0.75 of tibiae fuscous; hind coxae, trochanters, basal 0.50 of femora, apex of tibiae and first 2 tarsal segments whitish, apical 0.50 of femora, tibiae and tarsal segments 3-5 orange; abdomen dark with metallic reflections.

Head longer than wide; frontovertex very narrow with some very minute punctae; inner orbits converge anterior to the median ocellus; eyes longer than wide, ocellar triangle isosceles; lateral ocelli contiguous with eye; well removed from the occipital margin; gena shorter than eye; scrobes narrow, impressed, converging above; antennae inserted very close to the oral margin; mandibles tridentate; maxillary palpi with 4 and labial palpi with 3 segments; scape long, cylindrical, less than club; pedicel more than 2 times longer than thick; first 1.50 times longer than thick, third as long as thick, rest thicker than long; club 2.50 times longer than thick, with 3 segments, longer than funicle; obliquely truncate apically.

Front margin of pronotum deeply and broadly notched in the middle; hind margin convex; fore wings about 3 times longer than wide, infuscated except hyaline base and apex; vein *sm* long, curved

at apical 0.33; vein *m* very long, parallel to wing margin; vein *pm* very short, 0.50 of *st;* vein *st* less than 0.50 of *m;* broadly truncated at apex; marginal fringe short, spaced by a distance equal to 0.25 length of a fringe; hind wings 4 times longer than wide; marginal fringe short, spaced by a distance equal to 0.25 length of a fringe; middle tibial spur longer than metatarsus, tip of tibiae with a row of 6 pegs; metatarsus, tarsal segments 2-4 with 20, 6, 4 and 3 pegs respectively; hind coxae with 3 setae outside subapically.

Abdomen truncated apically; ovipositor slightly less than 0.50 of abdomen; subgenital plate with concave anterior margin and suboval anterolateral apodemes, posterior margin almost straight, rounded on sides with a small notch in the middle, oblique ridges on either side of the notch present; first valvifers subtriangular with prominent articular knobs; third valvulae very long, movably articulated with the second valvifers which also very long and narrow of almost uniform width.

Type locality : Aligarh

Distribution Guntur, Aligarh

Host : Nipaecoccus vastator (Mask.) on different plants.

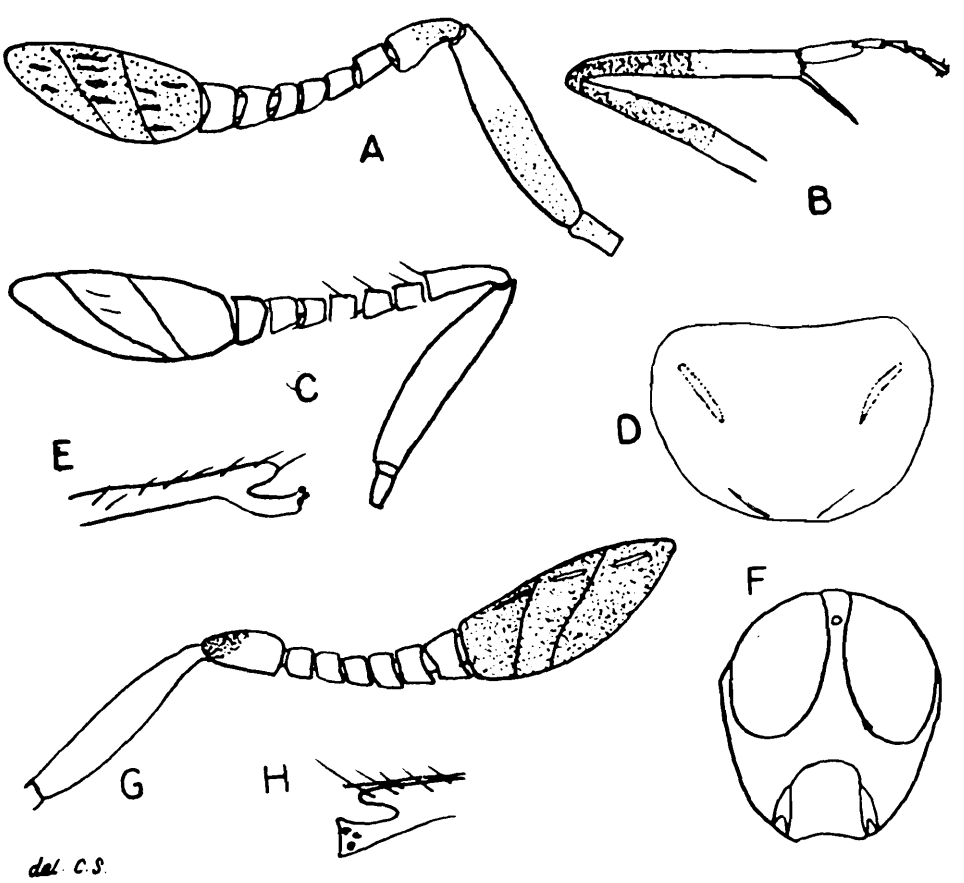

FIG. 227. A-B.*Prochiloneurus albifuniculus* Shafee *et al.,* female : A. Antenna; B. Middle leg; C-F. *Prochiloneurus testaceus* (Agarwal), female : C. Antenna; D. Subgenital plate; E. Stigmal venation; F. Head in front view; G-H. *Prochiloneurus hayati* Shafee *et al.,* female : G. Antenna; H. Stigmal venation *(Modified from* Shafee).

Prochiloneurus hayati Shafee, Alam & Agarwal

(Fig. 277)

1975 *Prochiloneurus hayati,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 53.

Female : Length 0.84 mm. Body orange-yellow, with metallic-greenish-blue reflection; frontovertex metallic greenish-blue, with a slight bronzy lustre, face yellow, interscrobal area black, occiput above and gena dusky; scape except apical 0.25 yellowish, basal 0.50 of pedicel pale brown, club dark brown; 0.25 yellowish, basal 0.50 pedicel and funicle white; thorax orange-yellow; pronotum with a brown patch in the middle; almost whole of mesonotum metallic-greenish-blue, metanotum and propodeum suffused dusky; fore wings infuscated, with base and apex hyaline, apical hyaline area almost 0.33 of width of central infuscated area; legs whitish, with the following parts yellow or brown; fore tibiae and tarsi yellow; apex of middle femora and basal 0.50 of middle tibiae on dorsal margin brown, rest of tibia yellow; hind legs with distal 0.50 of femora, tibiae except base and apical 0.25 of brown; abdomen brown with bluish-green reflections.

Frontovertex less than 1.50 times as wide as long; nearly 0.20 of head width; ocellar triangle acute-angled, lateral ocelli contiguous to eye; ocelloccipital space more than ocellar diameter; head in front slightly wider than long; antennal sockets near facial margin; scrobes long, angular above; gena shorter than eye; mandibles tridentate; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape more than 5 times as long as thick; pedicel less than 2 times as long as thick, shorter than following 3 funicular segments combined; first funicular segment a little longer than thick, other segments thicker than long; club longer than funicle.

Pronotum with 16 setae on hind margin; mesoscutum with silvery-white setae; scutellum with pale brown setae, brush with 14 long, black setae in 2 rows; fore wings more than 2.50 times; marginal fringe about 0.16 of width of disc; hind wings 4 times as long as wide; middle tibial spur equal to metatarsus; tip of tibia and tarsal segments 1-4 with 3, 7, 3, 2, and pegs respectively.

Abdomen as long as thorax; third valvulae long, movably articulated with second valvifers; subgenital plate with oblique anterolateral abodemes, posterior margin with a small notch, a pair of ridges obliquely extending from notch, outer plates of ovipositor with a ridge along basal 0.66 of dorsal margin that becomes submarginal in its distal 0.50; exserted part of ovipositor more than 0.50 length of abdomen.

Type locality Nabha (Punjab).

Host *Nipaecoccus* sp. on *Acacia* sp.

Neoprochiloneurus Viggiani

1919 *Prochiloneurus,* Mercet, *Bol. R. Soc. Esp. Hist. Nat.* 19 : 473.

1966 *Neoprochiloneurus,* Viggiani, *Boll. Lab. Ent. Agr. Fil. Silv.*, 24 : 95.

For the species of *Prochiloneurus* of Silvestri in the sense of *Prochiloneurus* Mercet, Viggiani proposed the name *Neoprochiloneurus.* They are parasitic in pseudococcinae and separated from *Chiloneurus* Westwood by the absence of scutellar hair tuft; less robust; ovipositor exserted to 0.25 length of abdomen. The genus also differs in tip of abdomen not being completely truncate; antennae with 9 segments : 1.1.4.3; scape cylindrical; club obliquely truncate; fore wing clouded in the apical 0.75; vein *m* long, *pm* shorter than *st;* axillae contiguous.

Type-species *Neoprochiloneurus bolivari* (Mercet)

Neoprochiloneurus nipaecocci (Subba Rao)

1967 *Prochiloneurus nipaecocci,* Subba Rao, *Bull. ent.,* 8 (1) : 1.

1976 *Neoprochiloneurus nipaecocci,* Subba Rao, *J. nat. Hist.,* 10 : 688.

Female : Body slender and long; head viewed from side long, frons convex, gradually sloping below; scrobes deep, occellocular space equal to ocellar diameter; front ocellar space 2 times interocellar space; eyes 2 times as long as broad; mandibles tridentate, middle tooth longer; maxillary palpi with 4 and labial palpi with 3 segments; scape slender and long; pedicel 0.12 of scape, slightly expanded above; funicle 6 segmented, segments unequal and longer than thick; club distinctly 3 segmented, slightly thicker than funicle, more than 3 times the last funicular segment; thorax strongly convex; scutellum yellow, pronotum light yellow with a brownish spot in the middle; fore wings narrow, long, very nearly resembling typical *Cheiloneurus,* more or less infuscated with areas of hyaline space intervening, prominent among them a triangular space below the vein *sm;* a narrow oblique streak originating at the junction of vein *st* and *m* traversing backwards; a curved steak meeing the anterior, mid hyaline space and the oblique streak; vein *m* punctiform; vein *pm* longer than *m,* but shorter than vein *st;* middle leg long, slender; femur slightly expanded in the middle, tibia narrow at base and expanded at apex; tibial spur longer than metatarsus.

Abdomen longer than thorax; ovipositor more than 0.50 of abdomen.

Type locality : Delhi.

Hosts : Nipaecoccus vastator Maskell on mulberry, *Nerium and Zizyphus* sp.

Cerapterocerus Westwood

1833 *Cerapterocerus,* Westwood, *Mag. nat. Hist.,* 6 : 495.
1848 *Telegraphus,* Ratzeburg, *Ichn. Forstins.,* 2 : 152.
1875 *Cerapterocerus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 747.
1875 *Cerapterocerus,* Thomson, *Skand. Hym.,* 4 : 150.
1904 *Cerapterocerus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 305.
1909 *Cerapterocerus,* Schmiedeknecht, *Gen. Ins.,* 97 : 254.
1921 *Cerapterocerus,* Mercet, *Fauna Iberica,* 659.
1924 *Cerapterocerus,* Timberlake, *Proc. Hawaii. ent. Soc.,* 5 (3) : 432.
1963 *Cerapterocerus,* Agarwal, *Ztschr. Parasitenk.,* 22 : 398.
1966 *Cerapterocerus,* Doblado, *Graellsia,* 22 : 54.
1979 *Cerapterocerus,* Krombein *et al.,* Hymen. N. America., 1 : 931.

Female : Occipital border acute; frontovertex large, almost flat; face strongly excavate; head from side subtriangular, eyes large, naked; mandible large, tridentate; maxillary palpi with 4 and labial palpi with 3 segments; second segment minute; antenna inserted close to the mouth, with 11 segments : 1.1.6.3; scape large, strongly laminately expanded; internally concave; pedicel short, triangular, longer than thick; funicle foliaceous; club short, equal to the funicle, obliquely truncate apically; pronotum relatively large; parapsidal furrows absent; scutellum large, triangular; eyes elongate; wings with many black spots, distributed radially; discal ciliation strong and partly infumate and invisible in the hyaline parts; vein *sm* with a stout subtriangular expansion apically; vein *m* long; *pm* more or less absent; *st* short; hind tibial spur single; abdomen large, elongate, triangular; ovipositor concealed.

Male : Very different from female; head normal, convex; frontovertex longer than wide; ocellocular space distinctly more than ocellar diameter; antennae filiform, long, inserted on level of lower oribital border; scape short; pedicel globose; funicular segment thicker than long, with verticillate setae; club entire, lanceolate; wing hyaline; vein as in female; vein *pm* subequal to *st;* abdomen suboval, shorter than thorax.

Type-species : Cerapterocerus mirabilis Westwood

KEY TO SPECIES

1. Vein *pm* absent; head punctate near front ocellus — *C. mirabilis* Westwood
   Vein *pm* distinctly present; head not punctate near front ocellus .·. — *C. virens* Agarwal

Cerapterocerus mirabilis Westwood

1833 *Cerapterocerus mirabilis,* Westwood, *Mag. nat. Hist.,* 6 : 495.
1848 *Telegraphus maculipennis,* Ratzeburg. *Ichn. Forstins.,* 2 : 153.
1875 *Cerapterocerus mirabilis,* Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 748.
1875 *Ceraperocerus mirabilicornis,* Thomson, *Skand. Hym.,* 4 : 151.

1919 *Cerapterocerus mirabilis,* Silverstri, *Boll. Lab. Zool. Gen. Agr. Protici,* 13 : 104.

1921 *Cerapterocerus mirabilis,* Mercet, *Fauna Iberica,* 661.

1975 *Cerapterocerus mirabilis,* Mani & Kaul, *Mem. School Ent.,* 4 : 48.

Female : Length. 1.90 mm. Body dark brown to black, vertex with metallic-bluish reflections; eyes black; antenna dark brown; mesonotum, scutellum and metanotum with metallic-violet reflections; fore femora and tibia brownish-black, tarsi brown; middle femora and tibia dark brown to black, except the brown apical 0.20; hind femora and tibia dark brown to black, except the brown apical 0.14; tarsus brown except darker brown metatarsus, fourth segment and apical segment; fore wing with brown bands; veins brown; abdomen concolorous with thorax.

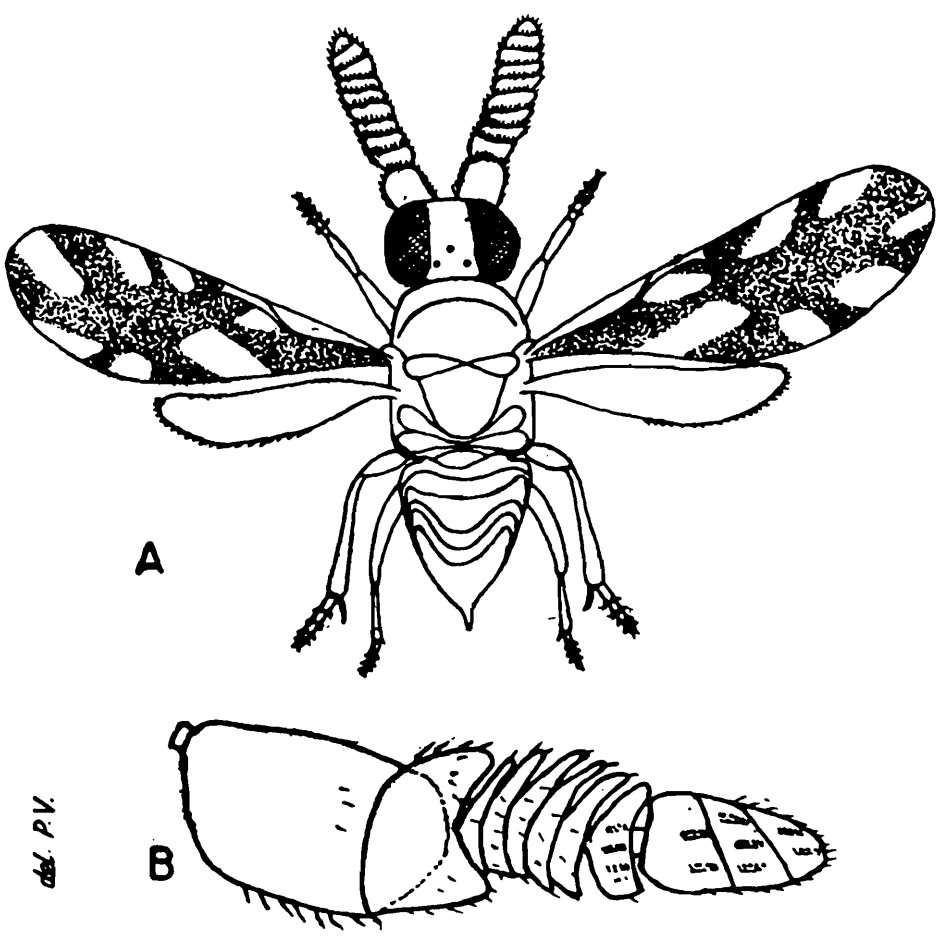

Fig. 228. *Cerapterocerus mirabilis* Westwood, female : A. Entire body; B. Antenna.

Head reticulately punctate; mandibles tridentate; scape 1.60 times as long as wide; pedicel 0.50 times longer than wide and 0.62 of scape; first funicular segment 0.14 times as long as thick; funicular segments 3-4 equal; fifth funicular segment 0.18 times as long as thick; sixth funicular segment 0.28 times longer than thick; club 1.83 times longer than thick, first segment 0.75 times longer than thick, second segment 0.70 times longer than thick; third segment 0.75 of the second, club equal to funicle.

Mesonotum, scutellum and pleurites finely reticulately striate; fore wing length to width 100 : 40; veins *sm : m : pm st* ratio 1000 : 100 : 100 : 100; hind wing length to width 100 : 28; fore femur 3 times longer than thick; tibia 2.33 times longer than thick and 0.58 of femur; tarsus 1.57 times tibia; middle femur 7.42 times longer than thick; tibia thickened towards apex, subequal to femur, 7 71 times longer than thick, tibial spur 0.27 of tibia and equal to metatarsus; metatarsus 0.27 of tibia and 0.39 of tarsus, second segment about 0.40 of metatarsus, third segment 0.83 of the second, fourth segment equal to the third, fifth segment 1.40 times the preceding tarsal segment; hind femur 7 times longer than thick; tibia subequal to femur; tarsus 0.77 of tibia.

Abdomen finely shagreened; length to width 100 : 55; abdomen 1.40 times thorax.

Type locality Europe

Distribution Europe; India : Ramgarh (Kumaon Himalaya), N. America, Australia.

Host : Phaenodiscus aeneus

Cerapterocerus virens Agarwal

1963 *Cerapterocerus virens,* Agarwal, *Z. Parasitenk.*, 22 : 398.

Male : Length 1.39 mm. Head metallic-green; eyes dark, dull, bare; scape dirty, pedicel brownish; funicle and club uniformly light brown; mesonotum and pleura green, somewhat metallic, sterna dark brown; middle coxae white, rest pale borwn; abdomen brown.

Head strongly wider than longer; frontovertex wide, slightly wider than long, eyes large, oval; ocellar triangle equilateral; ocellocular space subequal to ocellar diameter; lateral ocelli about 3 times this distance from occipital margin; scrobes deep, slightly convergent; antennal sockets placed on the line combining lower faces of eyes; mandibles with 2 teeth and a truncation; scape small, slightly less than 3 times longer than thick; pedicel very small, slightly more longer than thick; first funicular segment longest, about 3 times longer than thick, following segments vary very little in dimensions, all much longer than thick; club unsegmented, more than 3 times longer than thick, shorter than the preceding 2 segments combined.

Pronotum of almost uniform width with a notch in the middle of anterior margin, posterior margin slightly convex; axillae narrowly contiguous in the midle, metanotum narrow, band-like; propodeum narrow in middle, expanded at sides; fore wings hyaline, less than 3 times longer than wide; vein *st* very long, dilated into a triangle at 0.33 of apex; vein *m* about 5 times longer than thick; vein *pm* well developed; vein *st* equal to *pm;* marginal fringe short; hind wings hyaline, costal cell narrow; marginal fringe moderate; fore

legs uniformly whitish with a sight tinge of light brown; middle tibial spur longer than metatarsus; apex of tibiae with a row of 6 pegs.

Abdomen equal to thorax, cercal plates start at apical 0.67

Type locality Aligarh.

Host *Pseudococcus citri* Risso on *Citrus medica* L.

Comperiella Howard

1906 *Comperiella,* Howard, *Ent. News,* 17 : 121.
1915 *Pseudanusia,* Girault, *Mem. Queensland Mus.,* 4 : 155.
1917 *Pseudanusia,* Girault, *Insc. Incit.,* 5 : 29.
1921 *Habrolepistia,* Mercet, *Fauna Iberica,* 668 figs. 279-280.
1923 *Comperiella,* Timberlake, *Proc. ent. Soc. Washington,* 25 : 59.
1926 *Comperiella,* Compere, *Pub. Ent. California Univ.,* 4 (2) : 44.
1926 *Comperiella,* Mercet, *Eos,* 2 (4) : 320.
1934 *Comperiella,* Ramakrishna Ayyar, *Rec. Indian Mus.,* 36 (2) : 220.
1938 *Comperiella,* Mani, *Cat. Indian Ins.,* 23 : 86.
1966 *Comperiella,* Subba Rao, *Mushi,* 39 (13) : 135.
1976 *Comperiella,* Prinsloo & Annecke, *J. ent. Soc. S. America,* 39 (2) : 185.
1979 *Comperiella,* Krombein *et al.,* Hymen. N. America, 1 : 944.

Female : Body generally dark metallic; frontovertex creamy-white, with dark longitudinal median stripe; scrobes, declivous sides of scutellum smooth, polished; sculpture of axillae obscure or obsolete; mesoscutum and scutellum finely scaly-reticulate; metanotum and propodeum finely longitudinally-lineolate; face and cheeks wtih short, fine hairs; mesoscutum with scattered sparse hairs and one or 2 pre-apical of erect bristles.

Head from above flat, from side triangular, 2 times as thick as long; vertex horizontal, almost as thick as long, 0.50 times as thick as head; eyes large, without hair; 0.67 of eye in the lower triangular part and 0.33 of the horizontal part; scrobe shallow, tirangular, without obscure median prominence; mandibles with one acute ventral tooth and a broadly truncated dorsal margin, appearing tridentate; maxillary palpi with 4 segments, fourth segment subequal to 3 segments combined; labial palpi with 3 segments, first and third subequal, second short, transverse; antennae inserted in the middle of face, strongly foliaceously expanded; scape and pedicel much thicker apically than basally; scape compressed and laminately expanded; pedicel large, somewhat triquetrous; funicle with 6 short segments, expanded foliaceously; club large, compressed, with 3 segments, equal to pedicel and funicular segments combined.

Thorax wide, unusally thin dorsoventrally; mesonotum flat, without parapsidal furrow; pronotum short and arcuate; mesoscutum about 1.75 times as long as wide, hind margin almost straight; axillae almost contiguous; scutellum about 0.75 of mesoscutum, rounded apically; flattened, sides abruptly and strongly declivous; scutum flat,

reticulate in the middle, shiny; metanotum medially concealed by scutellum; fore wings with radiating markings; vein *sm* with a deflection before the apical 0.33; vein *m* short, stout, densely setose; vein *st* large, more or less equal to *m;* vein *pm* absent; hind tibia with 2 spurs, second spur very minute; fore tibia compressed, slightly shorter than female, middle tibial spur equal to metatarsus.

Abdomen slightly shorter than thorax, triangular, widest just before the middle, where the cercal plates are located; apex obtuse, basal corners rounded; ovipositor slightly exserted.

Male : Body generally black; frontovertex with brownish-yellow parallel to orbits; occiput marked with brownish-yellow; face and abdomen shiny; mesoscutum and sculptured portion of scutellum subopaque; smooth portion of scutellum cupreous or purplish; face and cheeks finely reticulate, with sparse pubesence; scutellum more coarsely sculptured than mesoscutum, reticulations closer, longitudinal, broadly rounded apex of scutellum smooth and highly iridescent.

Head very thin, viewed above about 3 times as wide as long; frontovertex almost 2 times as wide as long, occupying conisderably more than 0.50 of dorsal surface; ocellar tirangle strongly obtuse-angled; eyes moderately small, naked, slightly protuberant; head in front about 0.33 times thicker than height; antennae inserted close together, slightly above lower orbital lines; scrobes very short, deeply impressed; scape short, less than 3 times as long as thick; pedicel subglobose, about as long as thick; funicule with long curved hairs; funicular segments subequal, about 2.50 times as long as thick; club solid, elongate, gradually narrowed towards apex, subequal to the preceding 2 funicular segment combined.

Fore wings moderately wide, hyaline, rather densely ciliated; speculum well defined; vein *sm* slightly triangularly expanded in apical 0.33; vein *m* punctiform, obscured by a spot of dense infuscation; vein *pm* hardly developed; vein *st* short.

Abdomen short, not equal to thorax; cordate, widest in the middle.

Type-species : Comperiella bifasciata Howard

KEY TO SPECIES

1. Fore wing with only a single fascia, with traces of a second indicated only basally; pronotal collar with a white band in the middle; scutum with median longitudinal bluish-green band; scape subtriangular, flattened, the flattened part about 0.25 of the upper part; pedicel convex below	*Compereiella indica* Ramakr.
Fore wing with 2 or more fasciae.	2

2. The 2 fasciae of fore wing strongly diverging; the posterior fascia reaching to wing margin; pronotal collar with 2 submedian white patches, sometimes separated by a brownish area, but also absent when a singly white band results; scape subtriangular with the flattened part less than 0.50 of the rest of dorsal part — 3

The 2 fasciae more or less parallel or only very slightly diverging; pronotal collar with a broad white band in the middle; posterior fascia not reaching wing margin; scape subtrapezoidal, the flattened part more than 0.50 of the rest of the dorsal margin — 4

3. Interocellar space about 2 ocellar diameters, front ocellar space subequal to ocellocular space; frontovertex with a wide dark band; scutum with the median longitudinal band interrputed medially by a coppery line; middle tibial spur longer than metatarsus — *Compereilla bifasciata* Howard

Interocellar space equal to about one ocellar diameter, front ocellar space less than ocellocular space; frontovertex with narrow dark band; scutal median longitudinal bluish-green band not interrupted by coppery line medially; middle tibial spur subequal to metatarsus — *Comperiella lemniscata* Compere & Annecke

4. Fore wing at least 3 times as long as wide; posterior fascia short and ending far before margin; hyaline area between the basal infuscation and fasciae angulate in the middle; first 2 funicular segments subequal; club narrower than funicle. — *Comperiella unifasciata* Ishii

Fore wing at the most only 2.66 times as long as wide; posterior fascia long and ending a little before margin; hyaline area straight; first funicular segment more slender than the second; club only slightly narrower than funicle — *Comperiella aspidiotiphaga* Subba Rao

Comperiella indica Ramakrishna Ayyar

(Figs. 229 & 232)

1934 *Comperiella indica,* Ramakrishna Ayyar, *Rec. Indian Mus.*, 36 (2) : 219.
1938 *Comperiella indica,* Mani, *Cat. Indian Ins.*, 23 : 87.
1940 *Comperiella indica,* Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 14.

Female : Length 1.03 mm. Body generally light to dark brown; eyes dark; funicular segments and dorsolateral region of base of abdomen deep brown; in certain lights frontovertex between eyes shows a shining creamy-colour, with a narrow, long brown streak

over the ocellar region behind; median region of pronotum with a similar shining patch; mesoscutum with metallic-green; ocelli with some red; fore and middle femora, extreme basal region and narrow margins of tibiae concolorous with body, greater portion of tibiae, spur and all tarsal segments except last of a whitish-yellow; hind femora and tibiae and last tarsal segment whitish-yellow; hind femora, tibiae and last tarsal segment uniform deep dark brown, only basal tarsal segment whitish-yellow; wings hyaline; one conspicuous brownish fascia in fore wings arising near the middle of wing and extending to apex; a slight indication of a rudimentary hinder fascia just at the base of the front fascia, divided by a narrow indistinct hyaline region.

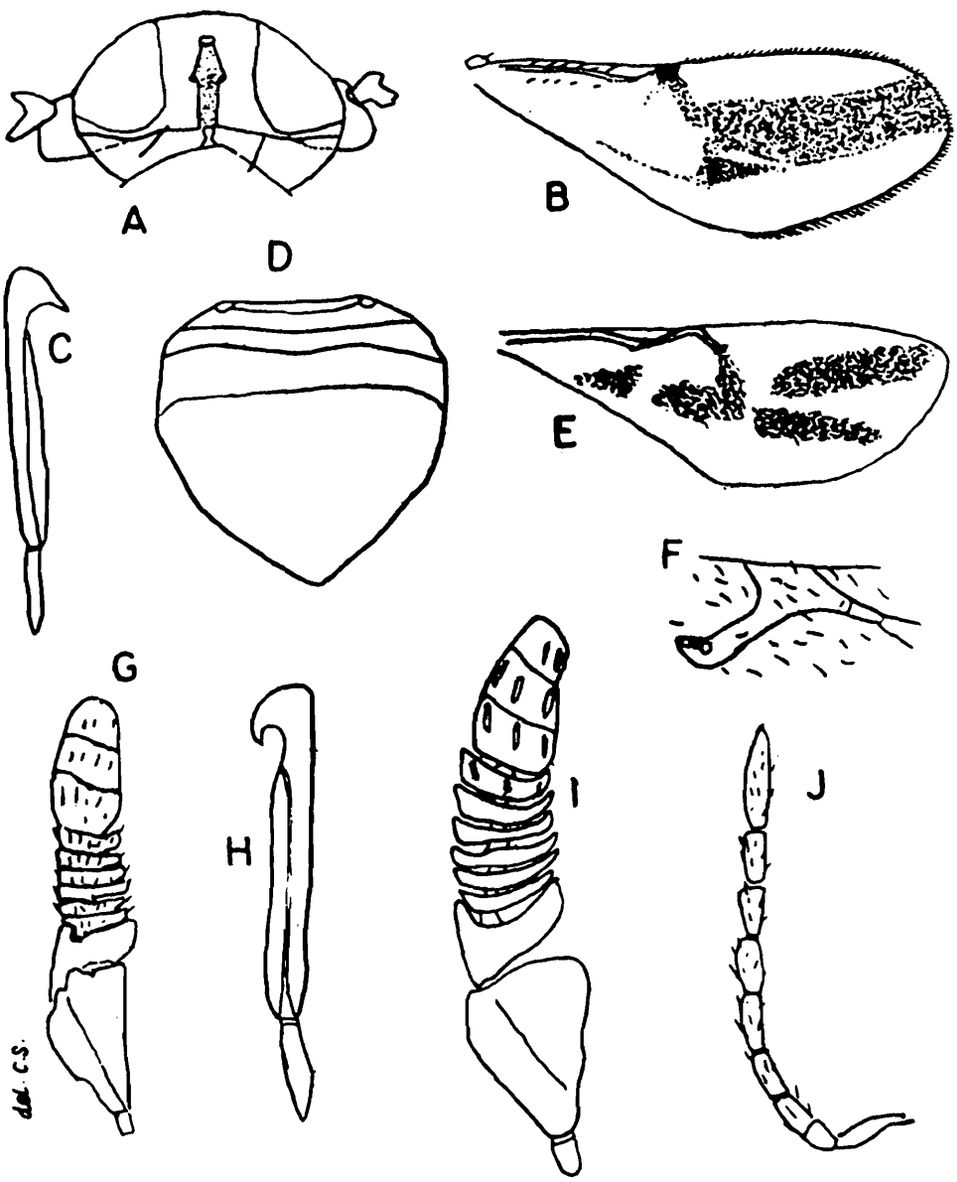

FIG. 229. A-D. *Comperiella indica* Ramakrishna Ayyar, female : A. Head in dorsal; B. Fore wing; C. Second and third valvifer; D. Abdomen; E-G. *Comperiella bifasciata* Howard : E. Fore wing, female; F. Stigmal venation; G. Antenna, female; J. Antenna, male; H-I. *Comperiella lemniscata* Compere & Annecke : H. Second and third valvula; I. Antenna, female.

Head broader than long; eyes large, ocelli forming an acute-angled triangle; surface of ocellar region beautifully polygonal; antenna well developed; in most other features this species resembles the type-species *C. bifasciata.*

Male : Smaller than female, a little less than 1.00 mm long; antennae quite different from female; funicular segment long, with long curved hairs; abdomen short, smaller than thorax; wings without any brownish fascia.

Type locality : Coimbatore.

Host : Aspidiotus tamarindi on *Tamarindus indicus*

Comperiella bifasciata Howard

(Figs. 229 & 230)

1906 *Comperiella bifasciata,* Howard, *Ent. News,* 17 : 122.
1907 *Comperiella bifasciata,* Howard, *Ent. News,* 237.
1925 *Comperiella unifasciata* (partim), Ishii, *Dept. Finance Japan, Imp. Plant Quarant. Serv. Tech. Bull.,* 3 : 25.
1926 *Comperiella bifasciata,* Compere, *Univ. California Pub. Ent.,* 4 : 44.
1935 *Comperiella bifasciata,* Glover, *J. Bombay nat. Hist. Soc.,* 38 : 153.
1938 *Comperiella bifasciata,* Mani, *Cat. Indian Ins.,* 23 : 86.
1940 *Comperiella bifasciata,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 14.
1962 *Comperiella bifasciata,* Annecke, *S. Africa J. Agric.,* 5 (2) : 281.
1963 *Comperiella bifasciata,* Peck, *Cat. Nearctic Chalc., Canad. Ent.* (Suppl.) 30.
1963 *Comperiella bifasciata,* Tachikawa, *Mem. Ehime Univ.,* (6) 9 (1) : 1-264.
1963 *Comperiella bifasciata,* Trjpitzin, *Vses. ent. Obsh.,* 52 : 75.
1966 *Comperiella bifasciata,* Subba Rao, *Mushi,* 39 : 135.
1971 *Comperiella bifasciata,* Annecke & Insley, *Ent. Mem. Depart. Agric. Tech. Serv. Repub. S. Africa.,* 23 : 1.
1975 *Comperiella bifasciata,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 29.
1979 *Comperiella bifasciata,* Krombein *et al.,* Hymen. N. America., 1 : 944.

Female : Length 1.24 mm. Head blue, with longitudinal white band from the front to the back and contiguous with the inner border of eyes; pronotum blue with 2 large longitudinal spots in the middle of anterior margin; scutum blue, in the middle slightly green; scutellum largely black, dull in the middle; at the sides and margins metallic-green; axilla, pleura, propodeum and abodmen blue; antennae blackish-blue; scape foliaceously expanded below in front and with a central infumate band, partly dark bluish; tips of fore and middle tibia yellow; tarsi pale, except the darker last segment.

Head above with the vertex flat; part of eye projecting horizontally above and 0.67 below; ocellar triangle equilateral; ocelloccipital space equal to ocellocular space; antennae inserted on level of lower orbital border; scape pyriform, strongly expanded apically, equal to the following 3 segments combined; funicular

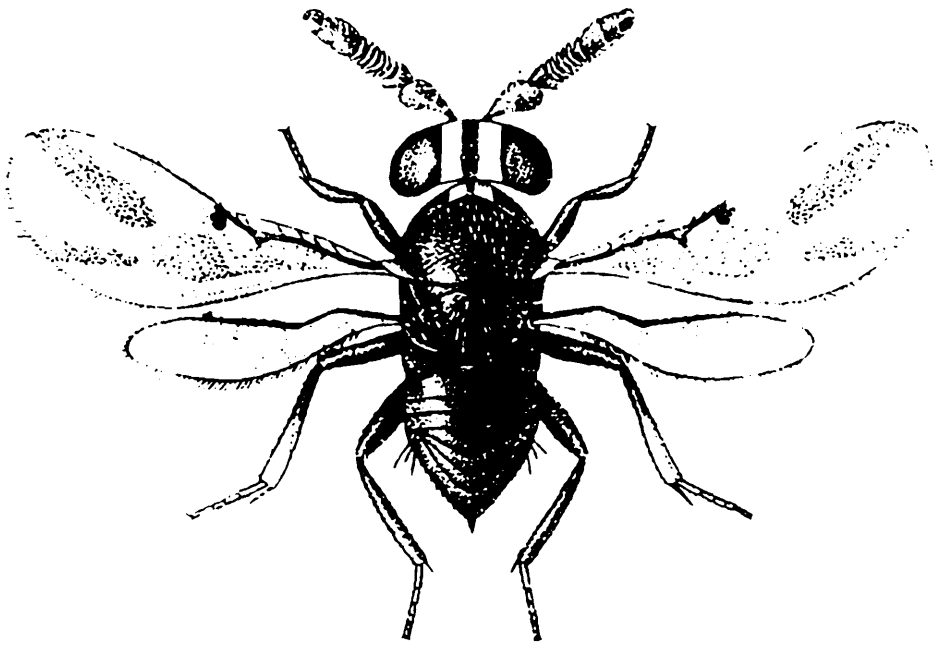

FIG. 229. *Comperiella bifasciata* Howard, female.

segments short and thick; club large, longer than the funicle, gently reduced apically.

Pronotum short, scutum large, squamoso-reticulate, with a small white spot; scutum large; pleura finely reticulate; propodeum finely rugose; fore wings broad, with speculum interrupted; marginal fringe long, equal to vein *m;* vein *st* with a small knob; hind wing hyaline; middle tibial spur equal to metatarsus, with one row of spines apically; following segments each with a pair of apical spines.

Abdomen subtriangular, subequal to thorax; shiny; first tergite as long as the following; terminal tergite laterally exserted.

Type locality : India.

Distribution : India, China, Formosa, Japan, Java, Fiji, Hawaii, USA, USSR, S. Africa, Mauritius, Australia.

Hosts : Aonidiella orientalis (Newst.), *A. aurantii* Maskll., *A. citrina, A. taxus* Leon, *Aspidiotus cryptomeriae* Kuw., *A. destructor* Sig., *Chrysomphalus bifasciatus* Ferr., *C. dictyospermi* Morgan, *C. ficus* Ashm., *Nuculaphis abietis* Schr., *Quadraspidiotus gigas* Thiem & Ges., *Hemiberlesia rapax Comst.*

Comperiella lemniscata Compere & Annecke

(Fig. 229)

1961 *Comperiella lemniscata,* Compere & Annecke, *J. ent. S. Africa,* 24 : 32.

1961 *Comperiella lemniscata,* Compere, *Hilgardia,* 31 : 229, 267.

1977 *Comperiella lemniscata,* Hayat, *Orient. Ins.,* 11 (2) : 245.

I have not seen this species and its description is also not available to me.

Type locality : Bombay.

Distribution : Bihar, Maharashtra, Rajasthan, Uttar Pradesh, Pakisthan; China; Hainan.

Host : Aonidiella orientalis (Newst.)

Comperiella unifasciata Ishii

(Fig. 231)

1925 *Comperiella unifasciata,* Ishii, *Tech. Bull.,* 3 : 25.
1926 *Comperiella unifasciata,* Compere, *Univ. California Pub. Ent.,* 4 (2) : 33-50. Fig. 9.
1963 *Comperiella unifasciata,* Tachikawa, *Mem. Ehime Univ.,* (6) 9 (1) : 1-264.
1965 *Comperiella unifasciata,* Agarwal, *Acta Hym. Tokyo,* 2 (2) : 78.
1975 *Comperiella unifasciata,* Saraswat, *Mem. School. Ent.,* 4 : 54.
1977 *Comperiella unifasciata,* Hayat, *Orient. Ins.,* 11 (2) : 248.

Female : Length 1.40-1.46 mm. Body generally bluish-black; frontovertex creamy-white, with a narrow dark; pronotal collar with a median undivided creamy-white angular mark; posterior margin of pronotum narrowly marked with bluish-black; median part of mesoscutum bright bluish-green; sides not so refringent, bluish-black; sides and apex of scutellum smooth and shiny with a strong violaceous and bluish lustre; scutellum subopaque, black; face, metanotum, propodeum, mesopleura and abdomen bluish-black, with some violaceous reflection; antennae, especially the funicle and club, not so refringent as the face; middle femora faintly suffused with brown; fore tibiae obscurely brown especially noticeable towards apex on the outer aspect; middle tibiae dark brown or blackish towards base, becoming light straw coloured on the apical tarsi of middle legs only tipped at extremely with fascous; apical tarsal segments of fore and hind legs completely fuscous.

Median longitudinal stripe of frontovertex not wider than the diameter of the median ocellus; ocelli in a strongly acute triangle; interocellar space equal to ocellar diameter, ocellocular and ocelloccipital spaces more than ocellar diameter; scape almost as thick as long; dorsal margin of pedicel almost 1.50 times as long as scape; funicular segments gradually decrease in width distally so that the sixth segment about 0.67 of the first; dorsal measurement of the funicular segment combined, about 2 times as long as that of pedicel; club slightly longer than the funicular segments combined, basal segment as thick as the sixth funicular segment; club narrowed distally so that the apical segment is about 0.67 of basal segment width.

Fore wings more than 3 times as long as wide; fasciae parallel, separated only by a narrow hyaline streak; hinder fascia broad at base, narrowed distally, its distal extremity well separated from wing margin.

Type locality : Japan.

Distribution : Japan, Fiji Islands, Indonesia, India, California.

Hosts : Aonidiella orientalis (Newst.), *Pseudaonidia duplex* Ckll., *Aspidiotus destructor* Sign.

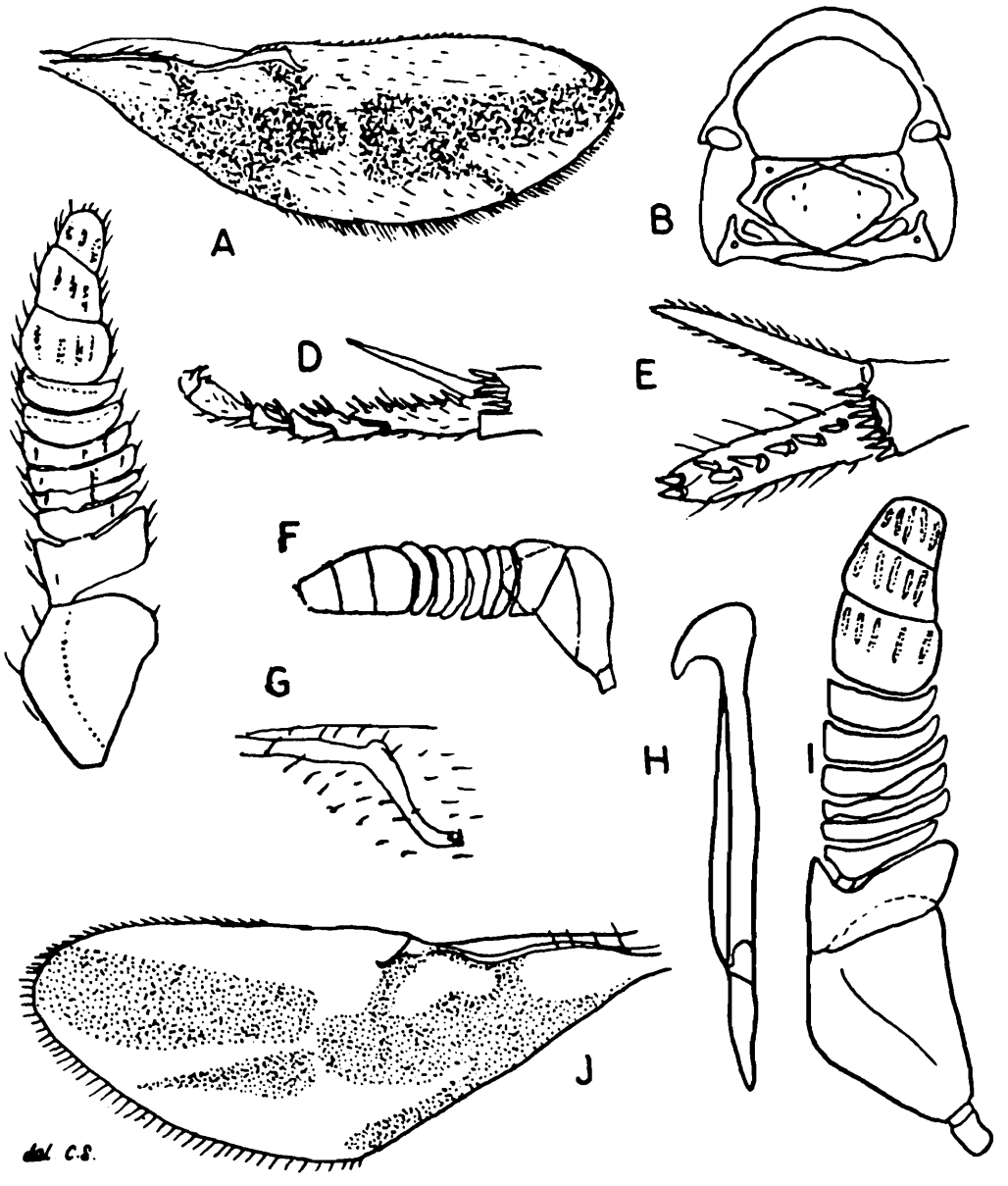

FIG. 231. A-G. *Comperiella unifasciata* Ishii, female : A. Fore wing; B. Thorax; C. Antenna. D. Part of middle leg; E. Tip of middle tibia and metatarsus; F. Antenna side view; G. Stigmal venation; H-J. *Comperiella aspidiotiphaga* Subba Rao, female : H. Second and third valvula; I. Antenna; J. Fore wing.

Comperiella aspidiotiphaga Subba Rao

(Fig. 231)

1966 *Comperiella aspidiotiphaga,* Subba Rao, *Mushi,* 39 : 137.

1975 *Comperiella unifasciata,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.,* (Zool.) 9 : 29.

1977 *Comperiella aspidiotiphaga,* Hayat, *Orient. Ins.,* 11 (2) : 247.

Female Length 1.13 mm. Body generally metallic-black; eyes grey; antenna and abdomen concolorous with rest of body; mesoscutum with green iridescence; scutellum metallic-green; legs dark brown, except the pale tarsi; proximal part of femur and distal of tibia of middle legs pale; frontovertex creamy-white with a narrow dark median longitudinal stripe; pronotal collar with a median undivided creamy-white angular mark; median portion of mesoscutum with bluish-green iridescence; sides and apex of scutellum shining, with strong bluish lustre; scutellum shagreened black; abdomen black, shining.

Frontovertex not much wider than median ocellus; ocelli in a strongly acute triangle; interocellar space subequal to ocellar diameter; scape longer than thick, nearly 2 times as long as thick; pedicel less than 0.33 scape and almost as thick; first funicular segment narrow; funicular segments 2-5 subequal; sixth narrow and longer than the rest; club distinctly with 3 segments, slightly longer than the funicle; mandible with a short acute tooth and a thick truncation representing the other 2 teeth; maxillary palpi with 4 and labial palpi with 3 segments; fore wing 3 times as long as thick; fasciae

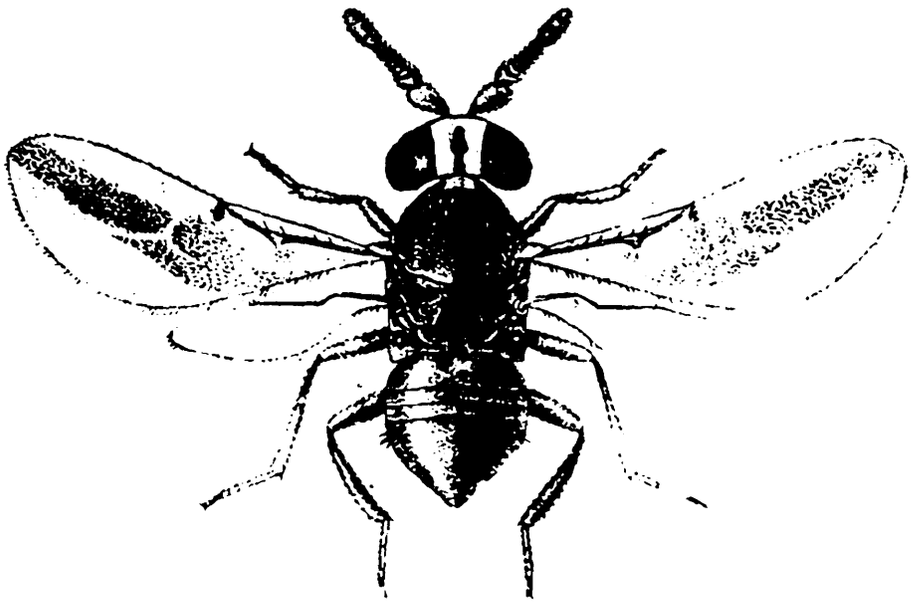

FIG. 232. *Comperiella indica* Ramakrishna Ayyar, female.

parallel, separated only by a very narrow hyaline streak at the beginning but gradually widening apically; posterior fascia broad at base, but almost pointed distally, its distal extremity well separated from wing margin.

Longer middle tibial spur longer than the metatarsus; tarsi with minute minute dentation; ovipositor slightly exserted.

Type locality Delhi.

Distribution : Delhi, Jaipur.

Hosts : Aspidiotus, sp. on *Dalbergia sissoo, Aspidiotus orientalis* (Newst.), *Aonidiella orientalis* (Newst.)

This species is closely related to *Comperiella unifasciata* Ishii, but differes in the fasciae of fore wing, size and ratio of antennal segments.

Species Incertae Sedis

Comperiella trifasciata Saraswat

1975 *Comperiella trifasciata,* Saraswat, *Mem. School Ent.,* 4 : 51.

Female : Length 1.60 mm. Body metallic-green and blue; head concolorous with body, lower 0.50 of face bright metallic-green, upper 0.50 upto vertex bright metallic-blue; eyes dark brown; antennae very dark brown except the brownish-white terminal segment of club; pronotum and mesonotum metallic-blue; scutellum bright metallic-green; abdomen dark brown with bronzy reflections; middle legs brown except for the blackish-brown apical 0.50 of femur and basal 0.30 of tibia; hind coxa and femur very dark brown, tibia basally darker, otherwise hind leg brown; fore wings conspicuously marked by 3 brown fasciae which arise near the middle of wing and extend upto wing margin, of the 3 middle fascia darker and extends to the tip; hind wings also infuscated; veins dark brown.

Head in front length to width 95 : 100, smooth, with scattered setigerous punctae on face, gena obscurely shagreened; ocellocular space 0.25 of ocellar diameter, front ocellar space equal to the diameter of front ocellus, interocellar space 2 times ocellar diameter; eyes pubescent; eye length to head length 63 : 100; mandibles quadridentate; antenna to body 40 : 100, segments 1.1.6.3; antennal sockets very close to the clypeal border; scape expanded ventrally, equal to pedicel and first 5 funicular segments combined, 1.83 times longer than thick; pedicel 1.46 times longer than thick; 0.25 of scape; funicular segment short, foliaceous, thicker than long, gradually becoming thicker distally; first funicular segment 1.70 times thicker than long, 0.36 of pedicel; second segment 2.80 times thicker than long; 0.71 of the first; third 2.14 times thicker than long, 1.40 times longer than the second; fourth 2.66 times thicker than long, 0.86 of the third; fifth 2.60 times thicker than long; 1.16 times longer

than the fourth; sixth longest and thickest, 2 times thicker than long, 1.30 times longer than the fifth; club stouter than funicle with 3 segments, 1.89 times longer than thick, equal to the preceding 5.50 funicular segments combined; first segment of club 1.73 times thicker than long and 1.22 times longer than the preceding funicular segment, second 1.63 times thicker than long and equal in length to the first, third segment conically pointed at tip, 1.07 times thicker than long, 1.20 times longer than the second.

Tip of pronotal collar in the middle with a faint white mark; pronotum and mesonotum with fine transverse reticulate sculpture; scutellum smooth, axillae and propodeum faintly reticulate, axillae not contiguous in the middle; pronotum, mesonotum and scutellum with sparasely scattered setae; paraspiracular carinae on propodeum present; fore wing length to width 100 : 37; veins *sm : m st* ratio 615 : 100 : 77; hind wing to fore wing length 75 : 100; fore coxa 1 77 times longer than thick; femur 3.42 times longer than thick, 1.50 times longer than coxa; tibia 0.91 of femur, about 3.66 times longer than thick; tarsus 0.81 of tibia, metatarsus 0.18 of tibia and 0.22 of tarsus second segment 0.75 of metatarsus, third subequal to the second, fourth only slightly less than the third, fifth equal to metatarsus; middle coxa subequal to fore coxa, 1.77 times longer than thick; femur 5.66 times longer than thick, 2.12 times longer than coxa; tibia equal to femur, 6.80 times longer than the thickness at apical end, tibial spur 0.23 of tibia and 0.36 of tarsus, second second segment about 0.50 of metatarsus, third only very slightly less than the second, fourth 0.87 of the second, fifth 0.75 of metatarsus; hind coxa as long as thick, femur 3 times longer than thick, about 2 times the coxa; tibia equal to middle tibia, 5.66 times longer than thickness at subapical end; tibial spur 0.14 of tibia and 0.83 of metatarsus; tarsus subequal to middle tarsus, 0.70 of tibia, metatarsus 0.17 of tibia and 0.25 of tarsus, second segment 0.83 of metatarsus, third 0.80 of the second, fourth subequal to the third, fifth subequal to metatarsus.

Abdomen smooth except for microscopical punctae, body to abdomen ratio 100 : 46; ovipositor conspicuously exserted.

Type locality : Mercara (Coorg) : Karnataka.

This species is distinguished from the other known species by the presence of 3 radiating fasciae in fore wing, antenna inserted close to the mouth border and in the characters of antennal segments.

Protyndarichus Mercet

1921 *Tyndarichoides,* Mercet, *Fauna Iberica,* 649 (preoccupied in Girault)
1922 *Protyndarichus,* Mercet, *Bol. R. Soc. Esp. Hist. Nat.,* 22 : 479.
1957 *Protyndarichus,* Alam, *Trans. R. ent. Soc. London,* 109, 421 : 462.
1963 *Protyndarichus,* De Santis, *Ann. Com. Invest. Cient. Buenos Aires,* 4 : 368.
1970 *Protyndarichus,* Alam, *Mushi,* 43 : 137-142.
1975 *Protyndarichus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 59.

Female : Head large, much convex, semiglobose, as wide as thorax; frontovertex transverse; occiput excavate, occipital border rounded; eyes sparsely hairy or nearly glabrous, diverging below; mandible tridentate; maxillary palpi with 4 and labial palpi with 3 segments; antennae short, segments 11 : 1 1.6.3; scape slightly compressed towards apex; pedicel thicker than long; funicular segments short but not transverse, nearly as long as thick; club thickly ovoid, much stouter than funicle; parapsidal furrows absent; axillae contiguous; scutellum wide, short, slightly convex, rounded apically; wings broad, slightly infumate, exceptionally rudimentary; vein *sm* with a triangular expansion in the apical 0.33; vein *m* a little longer than *st; pm* very short; speculum complete or broken; hind tibial spur single, equal to metatarsus; abdomen wide, triangular, strongly elongate apically; ovipositor slightly exserted.

Male : Vertex and frons longer than eye; antennae filiform, inserted in the middle of face; a little below lower orbital border; scape short, slightly compressed; pedicel submoniliform, shorter than the following segments; funicular segments elongate, last segment 3 times longer than thick, with verticillae hairs; club large, entire, abdomen short oval; sometimes males are brachypterous.

According to Shafee *et al.* (1975), the tenth tergite with front margin V shaped, hind margin with a protrusion in middle; lateral lobes of eighth tergite enlarged.

Type-species : Protyndarichus metallicus (Mercet)

This genus is related to *Tyndarichus,* but is separated by antennae inserted close to the mouth, convex head, rounded occiput, triangular expansion of vein *sm*.

KEY TO SPECIES

1. Mesonotum smooth or slightly reticulate, with transverse rows of white hair; abdomen shorter than head and thorax combined	2
Mesonotum reticulately punctate, with transverse rows of white hair; abdomen longer than head and thorax combined; width of frontovertex equal to pedicel and first funicular segment combined; pedicel equal to first 2 funicular segments combined; club equal to preceding 3 segments combined; vein *m* longer than *st;* vein *pm* very short; scape in male slightly shorter than first funicular segment	*P. metallicus* Mercet
2. Club distinctly shorter than funicle; vein *m* not longer than vein *st;* vein *pm* well developed	3
Club equal to funicle; vein *m* equal to *st*.	*P. hemiaspidoproctis* (Subba Rao)
3. Pedicel not shorter than first 2 funicular segments combined; funicular segments dark brown	4

Pedicel shorter than first 2 funicular segments combined; funicular segments dark, except white fifth and sixth; funicular segments 1-4 longer than thick, fifth and sixth thicker than long; club dark, 2 times as long as thick, equal to preceding 4 funicular segments combined; vein *pm* about as long as *st*, distinctly longer than *m* — *P. nigriclavatus* Shafee *et al.*

4. Frontovertex 1.50 times longer than wide; antennae brown; club 2.50 times longer than thick; vein *pm* longer than *st*. — *P. submetallicus* Alam

Frontovertex 3 times longer than wide; scape yellowish-brown, pedicel and funicle dark, club white; club 2 times as long as thick; vein *pm* shorter than *st* — *P. albiclavatus* Shafee *et al.*

Protyndarichus hemiaspidoproctis (Subba Rao)

(Fig. 233)

1967 *Tyndarichus hemiaspidoproctis,* Subba Rao, *Bull. ent.*, 8 (1) : 1-7.
1976 *Protyndarichus hemiaspidoproctis,* Subba Rao, *J. nat. Hist.*, 10 : 687.

Female Black, gena and abdomen greenish-blue; scutellum with coppery iridescence; legs brownish-yellow; fore wings hyaline; veins brown.

Head ventricular, vertex narrow; shagreened; antennae inserted in the middle of face, gena well developed; scrobes shallow; ocellar triangle acute-angled; lateral ocelli contiguous with eyes; mandible tridentate, 2 teeth acute, third truncate; antennae short; scape slender long, not dilated; pedicel less than 0.25 of scape but longer than the first funicular segment; funicular segments 1-2 longer than thick; club very large, 3-segmented; terminal segment oblique apically.

Pronotum very narrow; mesoscutum shagreened; scutellum strongly convex and rough; axillae widely separated; vein *sm* with triangular expansion before meeting margin; vein *m* very short, but longer than *pm* and almost as long as *st;* middle tibial spur slightly shorter than metatarsus; dentition on middle tarsi sparse.

Abdomen conical, as long as thorax; ovipositor slightly exserted.

Male Like female.

Type locality : Delhi.

Host *Hemiaspidoproctus cinareus* on guava.

Protyndarichus nigriclavatus Shafee, Alam & Agarwal

(Fig. 233)

1975 *Protyndarichus nigriclavatus,* Shafee *et al.*, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 60.

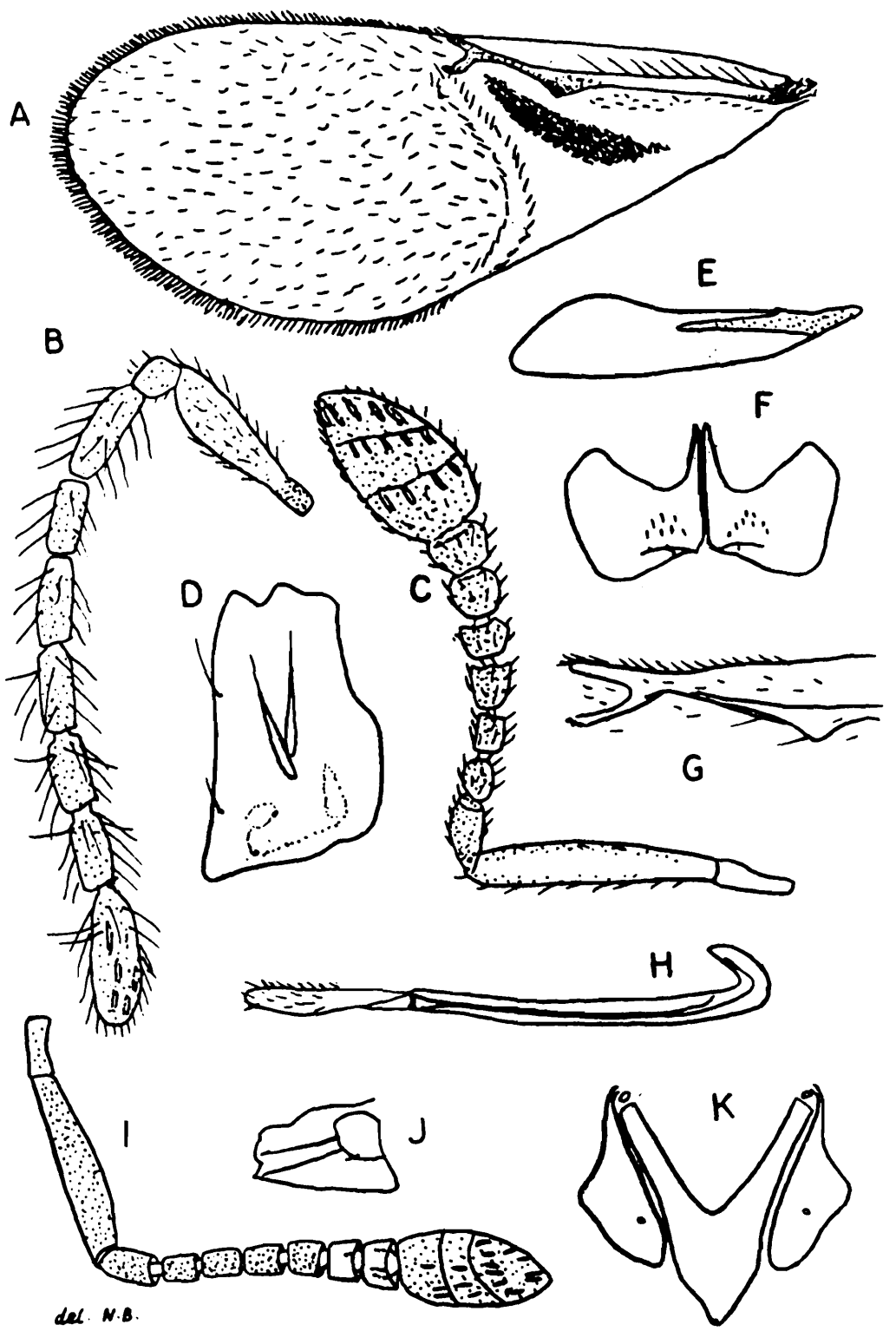

FIG. 233. A-D. *Protyndarichus hemiaspidoproctis* (Subba Rao) : A. Fore wing, female; B. Antenna, male; C. Antenna, female; D. Mandible, female; E-K. *Protyndarichus nigriclavatus* Shafee *et al.* female; E. Outer plate ovipositor; F. Subgenital plate; G. Stigmal venation; H. Second valvifer; I. Antenna; J. Mandible; K. Apex of abdomen.

Female : Length 2.19 mm. Body dark brown, with metallic-green reflections; head concolorous with thorax; radicle, basal 4 funicular segments and club dark, funicular segments 5-6 white, scape

yellowish-brown; thorax dark with metallic-bluish-green reflections; fore wing hyaline, coxa and femora dark brown, rest yellow; abdomen dark, with metallic reflections.

Head in front slightly wider than long; frontovertex almost 3 times longer than wide; ocellar triangle acute-angled; lateral ocelli contiguous to eye; ocelloccipital space 2 times ocellar diameter; gena equal to eye; prominence between toruli greater than width of frons betweeen eyes; mandibles tridentate, with one acute tooth and 2 short teeth with rounded apices; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape slightly dilated, about 4 times longer than thick; pedicel shorter than following 2 funicle segments combined; funicular segments 1-3 distinctly longer than thick, fourth segment slightly longer than thick, fifth and sixth thicker than long; club 2 times as long as thick, equal to the preceding 4 funicular segments combined.

Pronotum with hind margin somewhat convex, with 11 pairs of setae; axillae contiguous; scutellum wider than long, rounded apically; fore wings slightly more than 2 times longer than thick; costal cell broad; vein *sm* expanded into a triangle at apical 0.33; vein *pm* subequal to *st* and longer than *m;* marginal fringe short, spaced by a distance equal to 0.33 of hair length.

Abdomen longer than head and thorax combined; ovipositor exserted; third valvulae long and narrow; central notch of posterior margin of subgenital plate followed by laterally directed ridges.

Male : Differs from female as follows : frontovertex wider than long; eyes short; pedicel distinctly shorter than first funicular segment; funicular segments distinctly longer than wide; club entire.

Type locality : Jaipur Ramgadh Bundh.

Host : Coccid on *Ficus* sp.

Protyndarichus submetallicus Alam

(Fig. 234)

1970 *Protyndarichus submetallicus,* Alam, *Mushi,* 43 (12) : 140.

1975 *Protyndarichus submetallicus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 63.

Female : Length 1.30 mm. Head dark reddish-brown, with gena metallic-reddish-violaceous; frontovertex and gena with some scattered large punctae; antennae brown; thorax dark brown, slightly metallic; wings hyaline; fore and hind legs brown with coxae and basal 0.50 of femora dark brown; middle leg brown; abdomen reddish-brown.

Head wider than long; frontovertex narrow, about 1.50 times longer than wide, wider than pedicel and first funicular segment

combined; lateral ocelli contiguous with eye; ocelloccipital space equal to ocellar diameter; eyes bare, oval; gena short, less than eye; toruli below the level of lower orbital border; scrobes shallow, wide; mandibles tridentate; maxillary palpi with 4 and labial palpi with 3 segments; scape elongate, slightly expanded near apex, about 6 times longer than thick; pedicel about 2 times as long as thick, longer than following 2 segments combined; funicular segments subquadrate, sixth segment slightly thicker than long; club 3-segmented, obliquely truncate apically, 2.50 times longer than thick; shorter than preceding 5 funicular segments combined.

Axillae narrowly contiguous; pronotum of uniform width, anterior margin notched in the middle, hind margin straight with 22 setae; fore wings more than 2 times longer than wide; costal cell wide; vein *m* shorter than *st,* vein *pm* longer than either; marginal

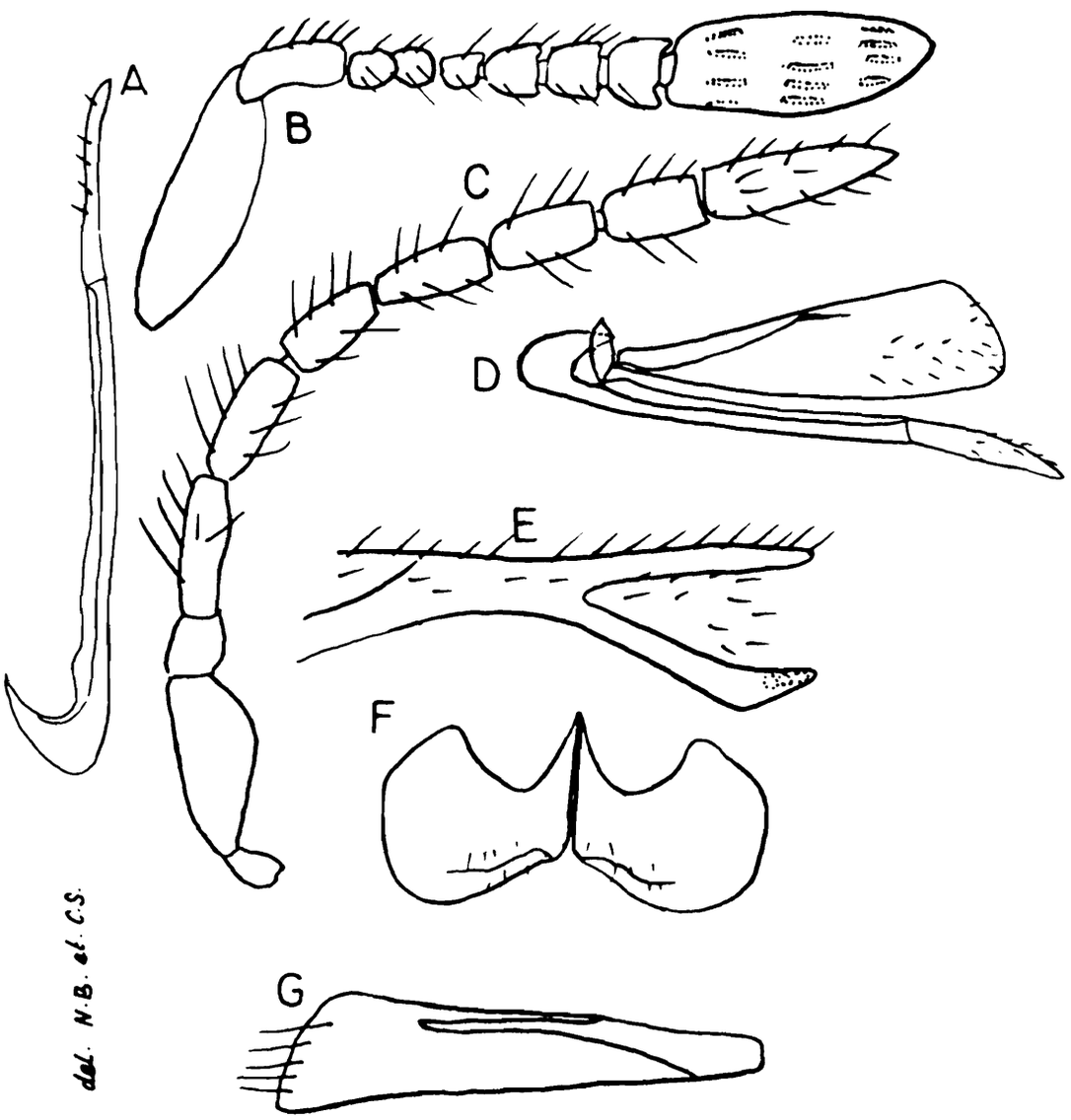

FIG. 234. *Protyndarichus submetallicus* Alam : A. Second valvifer, female; B. Antenna, female; C. Antenna, male; D. Genitalia, female; E. Stigmal venation, female; F. Subgenital plate, female; G. Outer plate of ovipositr, female. *(Modified from* Alam).

fringe short; hind wings 4 times longer than wide, marginal fringe moderately long; middle tibial spur shorter than metatarsus; tip of middle tibiae, metatarsus, tarsal segments 2-4 with 7, 17, 9, 8 and 5 pegs respectively; hind tibiae with one short spur

Abdomen subtriangular; longer than thorax; ovipositor slightly exserted; subgenital plate very narrow in the middle, with knob on each side of notch, followed by long curved ridges; mid-longitudinal groove complete; outer plates of ovipositor narrow basally, broad and obliquely truncated apically, with dorsal margin inflexed; first valvifers oblong, with articular knobs little prominent; second valvifers very narrow, dorsal margin thickened throughout; third valvulae long, narrow-conical and immovably united with second valvifers.

Male : Length 1.40 mm. Like female except as follows : Frontovertex wide; gena long; eyes small; scape short, compressed, more than 2.50 times longer than wide; pedicel shorter than first funicular segment; funicular segments cylindrical, much longer than thick, with long verticillate setae; first 2 segments subequal, longest; sixth segment shortest; club entire, more than 3 times longer than thick, longer than scape, equal to preceding 2 segments combined.

Type locality : Aligarh.

Host : Laccifer lacca.

Protyndarichus albiclavatus Alam & Agarwal

(Fig. 235)

1975 *Protyndarichus albiclavatus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 63.

Female : Length 1.85 mm. Body dark brown, with metallic-violet reflections, head dark, with metallic-violet reflections; flagellum dark; radicle and scape yellowish-brown, club white; abdomen dark, with radicle and scape yellowish-brown, club white; abdomen dark, with metallic-violet relfections.

Frontovertex 3 times longer than wide; ocelloccipital space less than ocellar diameter; scape cylindrical, slightly more than 5 times longer than thick; pedicel slightly longer than following 2 funicular segments combined; funicular segments 1-4 subquadrate, fifth and sixth slightly thicker than long.

Fore wings with vein *pm* longer than *m,* shorter than *st.* Abdomen as long as thorax; ovipositor slightly exserted.

Type locality : Arakonam.

Host : Nipaecoccus sp.

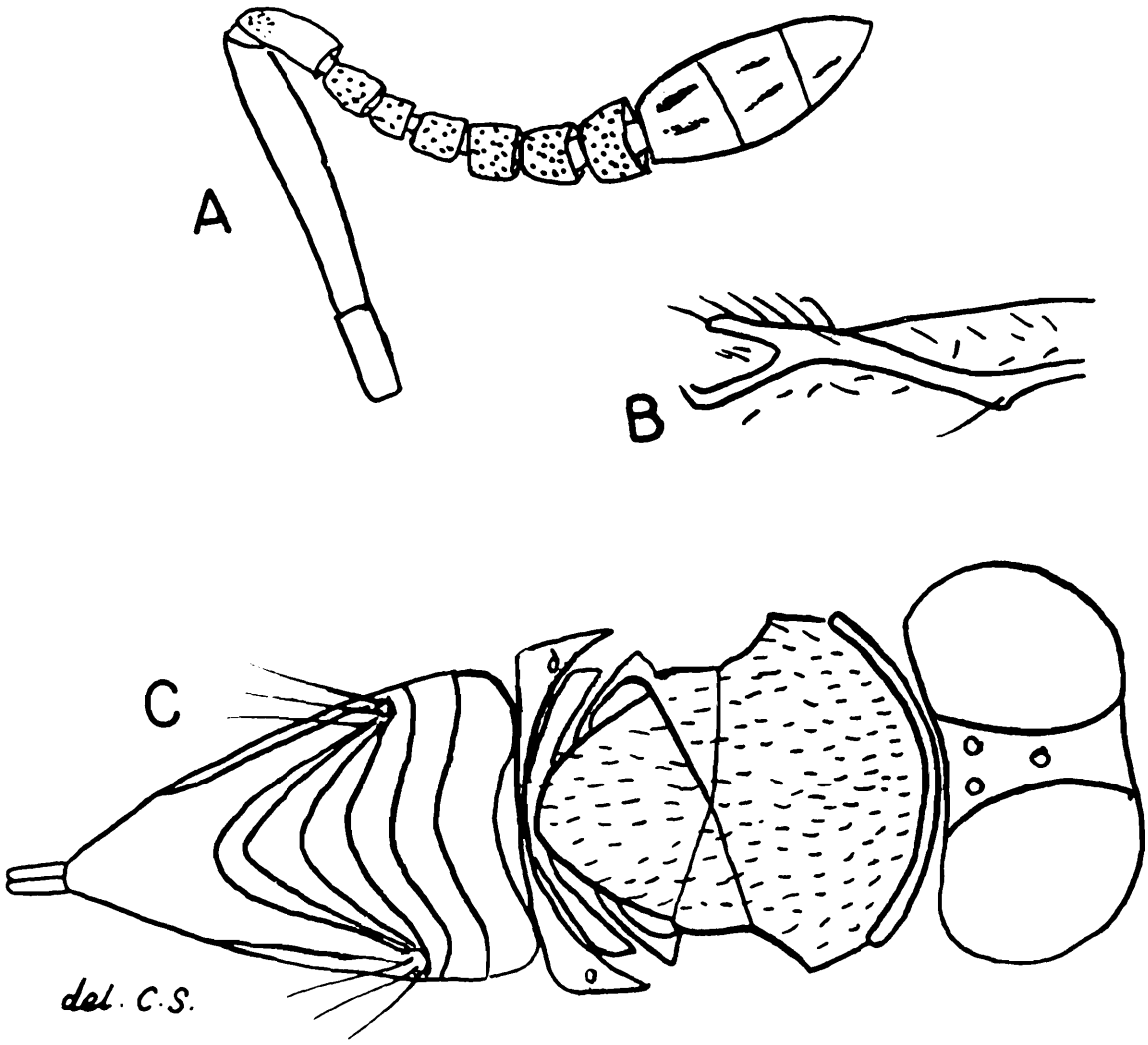

FIG. 235. *Protyndarichus albiclavatus* Shafee *et al.*, female A. Antenna; B. Stigmal venation; C. Entire body. *(Modified from* Shafee).

GENERA ET SPECIES INCERTAE SEDIS

Paraceraptrocerus Girault

1920 *Paraceraptrocerus,* Girault, *Proc. US nat. Mus.,* 51 : 479.
1967 *Paraceraptrocerus,* Annecke, *Trans. R. ent. Soc. London,* 119 (4) : 99-169.
1972 *Paraceraptrocerus,* Hayat, *Acta ent. bohemoslov.,* 69 : 211.

This genus is closely allied to *Anicetus.*

Paraceraptrocerus italicus Masi

1909 *Paraceraptrocerus italicus,* Masi, *Boll. Lab. Zool. gen. Agr. Portici,* 1-37.
1972 *Paraceraptorcerus italicus,* Hayat, *Acta ent. bohemoslov.,* 69 : 212.

This species is said to differ from *P. brevicaudatus* in the presence of an oblique groove on the outer aspect of scape and reduced first and second funicular segments.

Distribution : India : Uttar Pradesh, Aligarh.

Host Ceroplastes sp. on *Dalbergia sissoo.*

Tribe Encyrtini

1904 *Encyrtini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 297.
1909 *Eucomyni,* Schmiedeknecht, *Gen. Ins.,* 97 : 191.
1955 *Encyrtini,* Hoffer, *Sb. narod. Mus. Praze,* 11 (1) : 19.

Body generally non-metallic coloured; scape cylindrical; funicle with 6 segments and flattened apically in female; club with 3 segments; mandibles truncate, broad, without inner teeth; scutellum in female with hair tuft; fore wings infuscate in female; vein *m* punctiform, *st* and *pm* long.

Encyrtus — Group of Genera

Adelencyrtus Ashmead

1896 *Encyrtus* (partim), Howard, *Proc. US nat. Mus.,* 18 : 637.
1900 *Adelencyrtus,* Ashmead, *Proc. US nat. Mus.,* 22 : 401.
1904 *Adelencyrtus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 304.
1909 *Adelencyrtus,* Schmiedeknecht, *Gen. Ins.,* 97 : 253.
1915 *Epiencyrtoides,* Girault, *Mem. Queensland Mus.,* 4 : 108.
1921 *Epiencyrtoides,* Mercet, *Fauna Iberica,* 293.
1921 *Adelencyrtus,* Mercet, *Fauna Iberica,* 698.
1938 *Adelencyrtus,* Mani, *Cat. Indian Ins.*. 23 : 94.
1952 *Adelencyrtus,* Risbec, *Mem. Inst. Sci. Madagascar,* 2 : 54.
1956 *Adelencyrtus,* Tachikawa, *Ins. Matsum.,* 20 (3-4) : 93.
1959 *Rotrencyrtus,* Risbec, *Bul. Acad. Malgache,* 35 : 39.
1960 *Adelencyrtus,* Hoffer, *Acta Ent. Mus. Nat. Pragae,* 6 : 114.
1961 *Adelencyrtus,* Compere & Annecke, *J. ent. Soc. S. Africa,* 24 (1) : 47.
1963 *Adelencyrtus,* De Santis, *Ann. Com. Invest. Cient. Beunos Aires,* 4 : 239.
1979 *Adelencyrtus,* Krombein *et al.,* Hymen. N. America, 1 : 943.

Head very convex, as wide as thorax, with the scrobes deep and semi-circular; occiput excavate, rounded; eyes hairy; ocellar triangle equilateral; mandible with 4 teeth; maxillary palpi with 4 and labial palpi with 3 segments; antennae short, expanded apically, inserted below eyes, near the mouth; club very stout, equal to 2 times the thickness of the funicle, nearly as long as the funicle; scape short; slightly enlarged apically; funicular segments 6, transverse, first 2 segments much smaller than the others; mesonotum entire, with long setae; axillae contiguous; scutellum subtriangular, with few short setae; fore wing hyaline, with speculum; veins *m, pm* and *st* equal; in male the funicular segments slender, longer than thick, finely hairy; middle tibial spur equal to or longer than metatarsus; hind tibial spur single.

Abdomen subtriangular, equal to rest of body; ovipositor long.

Male : Scape and pedicel shorter than in female, funicle with annelli, club cylindrical entire.

Type-species : Adelencyrtus chionaspidis (Howard)

KEY TO SPECIES

1.	Fore wing with colourless discal cilia beyond middle	2
	Fore wing without colourless cilia	10
2.	First 2 funicular segments subquadrate, shorter than the third; middle and hind coxae brown	*A. funicularis* Hayat, Alam & Agarwal
	First funicular segment transverse	3
3.	Legs except coxae white or pale	5
	Legs except coxae, marked black	4
4.	First funicular segment shortest; segments 2-3 subequal, fourth longer than the third; vein *m* much longer than *st* or *pm*; middle and hind coxae brown	*A. coxalis* Hayat, Alam & Agarwal
	Funicular segments 1-4 subequal; veins *m, pm* and *st* subequal; coxae brown	*A. chionaspidis* (Howard)
5.	Middle femora and tibiae completely pale coloured	7
	Middle femora and tibiae marked black	6
6.	Funicular segments 1-4 subequal, 2 times as long; club longer than funicle and pedicel combined	*A. longiclavatus* Hayat, Alam & Agarwal
7.	Funicular segments 1-3 subequal.	8
	Funicular segments 1-4 or 1-5 subequal.	9
8.	Vein *m* longer than *st* and *pm*.	*A. mysorensis* Hayat, Alam & Agarwal
9.	Funicular segments 1-4 fused together; club equal to funicle and pedicel combined; truncate apically.	*A. clavatus* Hayat, Alam & Agarwal
	Funicular segments 1-3 fused together; club shorter than funicle and pedicel combined, conical apically.	*A. shafeei* Hayat, Alam & Agrwal
10.	Funicular segments 1-3 subequal; pedicel longer than the following 3 segments combined; vein *pm* longer than 0.50 of *m*, subequal to *st*.	*A. bimaculatus* Alam

Adelencyrtus funicularis Hayat Alam & Agarwal

(Fig. 236)

1975 *Adelencyrtus funicularis*, Hayat *et al.*, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 80.

Female Length 1.35 mm. Body metallic-green; head dark metallic-green, temples with bronzy lustre, gena violet; antennae yellow, pedicel brown above, 2 apical club segments brown; legs yellow but for the narrow dark tip of tibia; abdomen brownish-black.

Frontovertex finely reticulate, punctate, less than 2 times as wide as long, 0.25 of head width, lateral ocelli contiguous with eye; ocelloccipital space 4 times ocellar diameter; mandibles quadridentate; scape about 5 times as long as thick, longer than club; pedicel more than 2 times longer than thick; funicular segments 3-6 longer than thick, first 2 segments shorter than apical 4 segments; club shorter than preceding 4 funicular segmcnts combined.

Posterior margin of pronotum with 12 pairs of setae; mesoscutum about as long as scutellum, about 0.25 times wider than long; wings hyaline; fore wings more than 2.50 times as long as wide; veins *m : pm : st* ratio 23 : 12 : 15; hind wings a little more than 4 times as long as wide; middle tibial spur longer than metatarsus; tibial tip and tarsal segments 1-4 with 7, 18, 5, 4 and 4 pegs respectively.

Abdomen basally shiny, equal to thorax; ovipositor about 0.14 of abdomen.

Male : Length 1.07 mm. Body less metallic than female; scape yellow; pedicel black dorsally, ventrally funicular segments and club basally infuscate; rest yellow; fore legs except tip of coxae brown; femora in middle, tibiae at base dorsally and last tarsal segment brown, rest yellow; middle leg with coxae, a patch on femora basal third brown, rest yellow; hind legs with coxae, femora except apex and basal 0.25 of tibiae, brown, rest pale yellow.

Frontovertex as long as wide; ocellar triangle obtuse; second funicular segment slightly shorter than first.

Type locality : Shoranur

Host : Unidentified Diaspidini

Adelencyrtus coxalis Hayat, Alam & Agarwal

(Fig. 236)

1976 *Adelencyrtus coxalis,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 78.

Female : Length 0.93 mm. Head brown to blackish-brown, frontovertex and face with slight greenish-blue reflections; setae dark brown, a row of setae along eye, 2 dark long setae on occipital margin; antennae yellow, dusky in part; pedicel black above; thorax brownish-black; legs pale yellow; first tergite metallic-green, rest of abdomen brownish-black.

Face, vertex and gena finely reticulate; eyes with short white setae; dorsum 3.50 times wider than frontovertex; latter 2 times as long as wide; ocellar triangle acute; ocellocular space about 0.50 of ocellar diameter; ocellocciptal space 3 times ocellar diameter; gena

shorter than eye; mandibles quadridentate; 2 ventral teeth short and broad, ventral margin with short, stout, peg-like seta in the middle; maxillary palpi with 4 and labial palpi with 3 segments; scrobes deep, triangular, meeting above; antennal socket removed from facial margin by less than its diameter slightly below level of orbital borders; antennae with 11 segments 1.1.6.3; scape a little flattened, nearly 4 times longer than thick; pedicel a little longer than the following 3 funicular segments combined; first 3 segments thicker than long, first segment the shortest; segment 4 a little thicker than long, fifth segment quadrate, sixth as thick as long; club slightly shorter than funicle and subequal to scape.

Hind margin of pronotum, mesoscutum and axillae shiny; scutum with fine, obscure reticulations; axillae transversely lineolate; scutellum prominently reticulate, elongate reticulate laterally, front margin of pronotum with a notch in the middle, hind margin concave, with 7 pairs of setae; axillae narrowly confluent; scutellum, 0.25 times wider than long, broadly rounded apically with 8 setae; metanotum narrow; propodeum much narrowed in the middle, widened laterally; fore wings hyaline, 2.50 times as long as wide; viens *sm : m st :* ratio 200 : 100 : 100; marginal fringe nearly 1.50 times the width of wing; middle tibial spur equal to metatarsus; tip of tibia and tarsal segments 1-4 with 6,14,4,3 and 3 pegs respectively.

Abdomen longer than thorax; cercal plates at basal 0.33; first valvifers triangular; second valvifers with a submarginal ridge along its whole length, third valvulae movably articulated with it, ovipositor exserted to about 0.16 of abdomen.

Male Length 0.75 mm. Body without metallic lustre, blackish-brown; scape whitish-yellow, pedicel black above, rest of antenna rusty-yellow; wings hyaline; fore coxae except apices yellowish-brown, femora and tibiae dusky-yellow, tarsi dusky-yellow, middle coxae and a narrow strip above of tibiae in middle brownish; hind coxae, femora except basal sixth brown, tibiae slightly suffused with brown in middle; rest of legs yellowish.

Frontovertex slightly longer than wide; ocellar triangle obtuse; scape 2.66 times longer than thick; pedicel slightly less than 2 times as long as thick; of the 2 annular funicular segments the second shorter than first; club large, solid, slightly curved, over 8 times as long as thick, with long cilia and numerous longitudinal sensoria; digitus volsellaris beset with one stout denticle.

Type locality Guntur

Host *Pinnaspis strachani* (Cooley) on *Murraya koenigii*

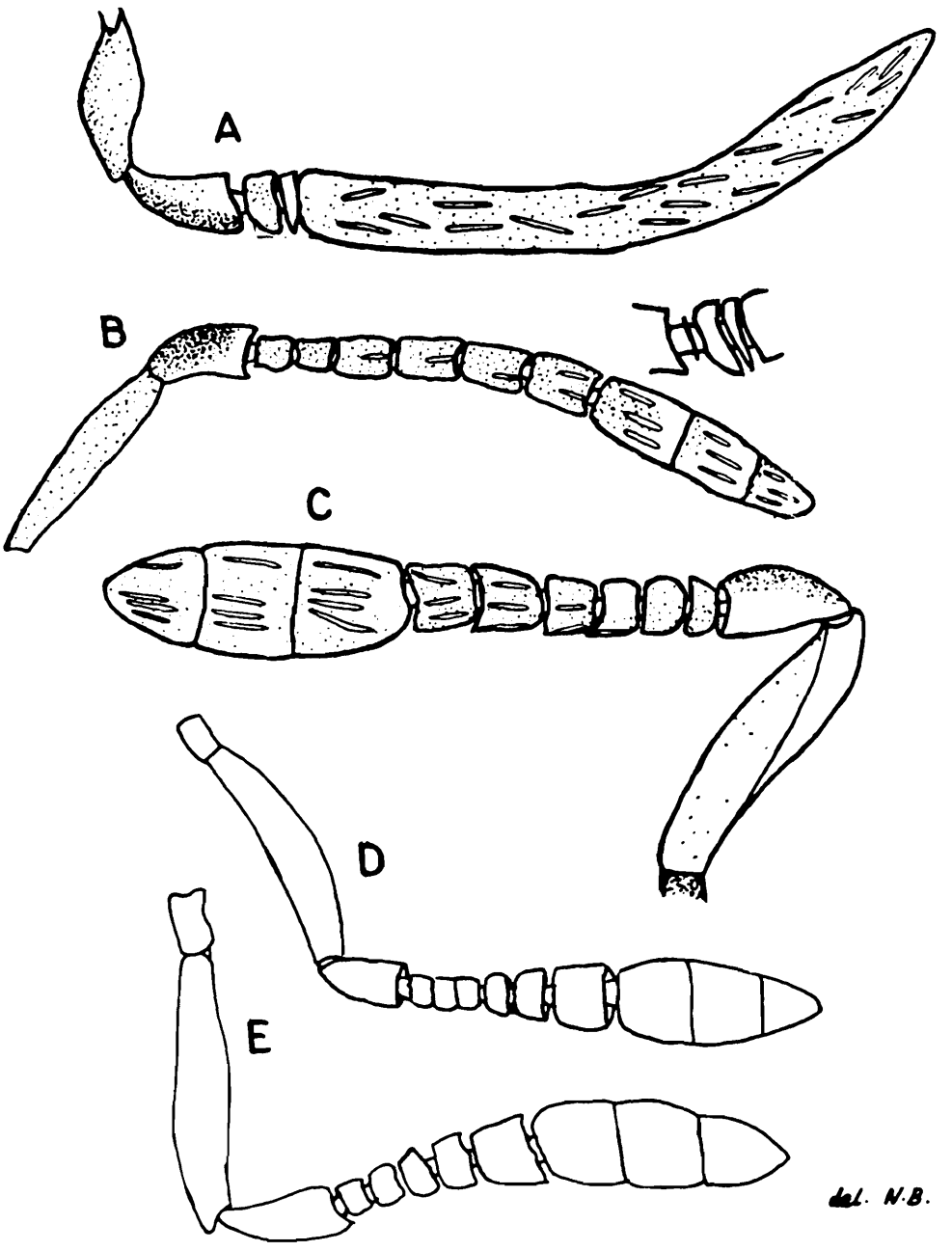

FIG. 236. *Adelencyrtus coxalis* Hayat *et al.*, A. Antenna, male; C. Antenna, female; B. *Adelencyrtus funicularis* Hayat *et al.*, female : Antenna; D. *Adelencyrtus shafeei* Hayat *et al.*, female : Antenna; E. *Adelencyrtus mysorensis* Hayat *et al.*, female : Antenna.

Adelencyrtus chionaspidis (Howard)

1895 *Encyrtus chionaspidis,* Howard, *Proc. US nat. Mus.*, 18 : 637.
1909 *Adelencyrtus chionaspidis,* Schmiedeknecht, *Gen. Ins.*, 97 : 253.
1938 *Adelencyrtus chionaspidis,* Mani, *Cat. Indian Ins.*, 23 : 94.
1940 *Adelencyrtus chionaspidis,* Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 16.

Female : Length 1.20 mm. Body black, with some metallic-reflections; antennae brown; legs except coxae pale brown; coxae concolorous with body; antennae inserted near the mouth; scape slender; pedicel equal to the following 3 segments combined; funicular segments 1-4 subequal, but becoming gradually thicker; segment 5 about 2 times as long as fourth segment; segment 6 longer than the fifth; club somewhat swollen basally, reduced and pointed apically; subequal to funicle; face protruding; ocellar triangle obtuse-angled; axillae contiguous; ovipositor slightly exserted; abdomen equal to thorax; veins *m, pm, st* subequal.

Type locality : Ceylon : Punduloya

Host Chionaspis graminis

Adelencyrtus longiclavatus Hayat, Alam & Agarwal

1975 *Adelencyrtus longiclavatus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 84.

Female : Length 0.88 mm. Antennae yellowish-brown; pedicel largely dark brown; fore coxae brown; femora and tibiae faint brown; rest of leg white; middle coxae brown; femora faint brown; tibiae with a brown patch at basal 0.33 ; base of tibiae and rest of leg white; hind coxae, femora except base, tibiae except apices brown; rest whitish.

Scape 3 times longer than thick; pedicel 1.50 times scape, slightly longer than following 4 funicular segments combined; segments 1-4 transverse, about 2 times as long as thick; segment 5 slightly thicker than long; segment 6 as long as thick; club equal to funicle and pedicel combined; wings hyaline; speculum interrupted behind by discal cilia; middle tibial spur subequal to metatarsus.

Abdomen longer than thorax; ovipositor slightly more than 0.25 of abdomen.

Type locality : Rajasthan, Jaipur, Ramgarh Bundh

Host : Eriococcus lagerstromiae Kuwana on a wild plant.

Adelencyrtus mysorensis Hayat, Alam & Agarwal

1975 *Adelencyrtus mysorensis,* Hayat *et al., Aligarh Muslim Univ. Mon.,* (Zool.) 9 : 82.

Female : Length 0.86 mm. Antennae yellow, pedicel brownish-black above, first club segment dusky-yellow, apical 2 club segments yellowish-fuscous; legs yellow; middle and hind coxae except tips and hind femora except base and tip brown.

Head with dorsum 1.50 times as long as wide; frontovertex 0.33 of head width; about 2 times as long as wide; ocellar triangle equilateral; lateral ocelli contiguous with eye, mandibles quadridentate;

scape about 4 times as long as thick and slightly shorter than club; pedicel a little more than 2 times as long as thick, longer than the following 4 funicular segments combined;funicular segments 1-3 subequal, fourth slightly longer than third; fifth and sixth large, longer, thicker than the basal 4 segments; club longer than funicle; fore wings nearly 2.50 times as long as wide; veins *m pm : st* ratio 15 : 5.5 : 8; marginal fringe nearly 0.10 of width; middle tibial spur equal to metatarsus; tips of tibia and tarsal segments 1-4 with 6,10,3,2 and 2 pegs respectively.

Abdomen longer than thorax; ovipositor 0.12 of abdomen.

Type locality : Mysore : Gulbarga

Host : Duplachionaspis on *Dichantium annulatum*

Adelencyrtus clavatus Hayat, Alam & Agarwal

1975 *Adelencyrtus clavatus,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 83.

Female : Length 0.88 mm. Body dark brown; head metallic-green; pedicel brown; scape, funicle and club yellow; wings hyaline; legs pale yellow; coxae brown; abdomen brown with faint green reflections.

Vertex 1.50 times as wide as long; frontovertex about 1.33 times head width and about 2 times as long as wide; ocellar triangle slightly acute; ocellocular space 2 times ocellar diameter; almost touching eye; gena shorter than eye; scape 4.50 times as long as thick; pedicel as long as following 4 funicular segments combined; funicular segments 1-5 transverse, segment 6 slightly thicker than long and about 2 times longer than fifth segment; club large, equal to funicle and pedicel combined, truncate apically.

Apex of scutellum slightly shiny; fore wings a little less than 3 times as long as wide; veins *sm : m : st : pm* ratio 14 : 4 : 6 : 5; vein *st* without a distinct neck; marginal fringe about 0.10 width of disc; middle tibial spur shorter than metatarsus, longer than third valvula.

Abdomen slightly longer than thorax; ovipositor concealed.

Type locality : Chilkalurpeta (Andhra Pradesh)

Hosts : Unaspis atricolor and *Lepidosaphes* on *Tamarindus indica.*

This species differs from other known species of *Adelencyrtus* in the basal segments of antennae transverse, club as long as funicle and pedicel combined. The characteristic shape of the vein *st* also quite unique in the genus.

Adelencyrtus shafeei Hayat, Alam & Agarwal

(Fig. 236)

1975 *Adelencyrtus shafeei,* Hayat *et al., Aligarh Muslim Univ. Mon.* (Zool.) 9 : 84.

Female Length 0.86 mm. Head black, somewhat shiny; radicle and pedicel except tip brown; scape and funicular segments 1-3 white, rest of antenna pale yellow; coxae and hind femora,except at base, brown; rest of legs white; abdomen blackish-brown, with a green sheen.

Frontovertex a little less than 1.50 times as long as wide; scape about 4.50 times longer than thick; pedicel equal to following 4 funicular segments combined; segments 1-5 transverse, 1-3 fused together; segment 6 large, only slightly thicker than long; club longer than funicle, shorter than funicle and pedicel combined.

Vein *st* enlarged, with a distinct neck; speculum interrupted behind; vein *pm* slightly shorter than *st;* marginal fringe slightly over 0.20 of wing width; hind wings 4 times as long as wide; middle tibial spur shorter than metatarsus.

Abdomen longer than thorax; ovipositor concealed.

Type locality : Rajasthan; Udaipur

Host : Aonidiella sp. on *Mangifera indica.*

Adelencyrtus bimaculatus Alam

1970 *Adelencyrtus bimaculatus,* Alam, *Bull. Ent.,* 11 : 136.

1975 *Adelencyrtus bimaculatus,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 85.

Female : Head metallic-green, except tips of scape and pedicel, funicular segments 1-4 and club brown; funicular segment 5 yellowish-brown, rest of antenna white; thorax metallic-green; fore wings infuscate; fore coxae brown; femora basal and tibiae basal 0.50 on both sides pale brown, rest whitish-yellow; middle coxae and patch at basal 0.50 of tibiae (except base) brown; rest whitish; hind coxae, femora except base and tip, tibiae except base and tips brown; tarsal segments 4-5 or only 5 dusky; rest of leg white; abdomen dark brown, with metallic-green reflections.

Frontovertex about 2 times longer than wide; ocellar triangle acute; lateral ocelli close to eye and slightly more than 2 ocellar diameters from occipital margin; eyes with minute, sparse setae; gena slightly longer than transverse diameter of eye; antennal sockets above oral margin, upper margins in level with lower oribital border; scape about 4.50 times as long as thick; pedicel about 2 times as long as thick and slightly shorter than the following 4 funicular segments combined; first 3 funicular segments transverse, subequal; segments 4-6 gradually becoming larger; club equal to funicle.

Mesoscutum reticulate; scutellum punctate-reticulate; fore wings about 2 times as long as wide; vein *sm* with 5 seate; vein *m* longer than *st* or *pm;* marginal fringe very short; hind wings slightly less than 4 times as long as wide; marginal fringe 0.25 of width of disc; middle tibial spur longer than metatarsus.

Male : Like female except the broader frontovertex and the differently shaped antennae; scape white; pedicel mostly brown; funicular segments white with dorsal surface of first segment brown.

Type locality Aligarh.

Distribution Jaipur

Host *Aonidiella orientalis* on Citrus and on *Dalbergia sissoo.*

Species Incertae Sedis

Adelencyrtus planchoniae (Howard)

1896 *Encyrtus planchoniae,* Howard, *Proc. US nat. Mus.,* 18 : 637.
1909 *Adelencyrtus planchoniae,* Schmiedeknecht, *Gen. Ins.,* 97 : 253.
1938 *Adelencyrtus planchoniae,* Mani, *Cat. Indian Ins.,* 23 : 94.
1940 *Adelencyrtus planchoniae,* Pruthi & Mani. *ICAR Misc. Bull.,* 30 : 17.

Female : Length 1.20 mm. Body honey-yellow; mesonotum in front dark, slightly metallic; sides of mesonotum and tip of abdomen submetallic.

Head viewed above subtriangular; eyes nearly circular; ocellar tirangle acute-angled; antennae inserted in the middle of face; scape slender; pedicel minute; funicular segments as long as thick; club ovate, slightly longer than the preceding 2 segments combined; axillae meeting at tips; mesonotum smooth, shiny; vein *sm* very short.

Type locality : Ceylon : Punduloya.

Host : Planchonia delicata.

Adelencyrtus solidus (Howard)

1896 *Encyrtus solidus,* Howard, *Proc. US nat. Mus.,* 18 : 638.
1909 *Adelencyrtus solidus,* Schmiedeknecht, *Gen. Ins.,* 97 : 253.
1938 *Adelencyrtus solidus,* Mani, *Cat. Indian Ins.,* 23 : 94.
1940 *Adelencyrtus solidus,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 17.

Male : Length 1.50 mm. Body black, with obscure shine; scape brown; pedicel almost black; funicle light brown; coxae and femora nearly black, with the tips of femora somewhat lighter; fore and hind tibiae brown, except the yellow tips; middle tibia light yellowish-brown; tegulae brown; wings hyaline, vein *m* almost black; antennae

inserted slightly below the middle of face; scape short, not enlarged; funicular segments stout, with short pubescence; segments 2-5 subequal, fifth segment somewhat shorter; first segment longer; club short, shorter than the preceding 2 segments combined; head finely obscurely granular; mesonotum faintly shagreened; vein *m* thickened.

Type locality : Ceylon : Punduloya.

Host : Eriococcus rhodomyrti.

Carabunia Waterston

1928 *Carabunia,* Waterston, *Bull. ent. Res.,* 19 : 249-251.
1971 *Carabunia,* Subba Rao, *J. nat. Hist.,* 5 : 209.

Related to *Neocladia* Perkins, with flattened, more or less foliaceous hind tibiae and tarsi, exclusively parasitic on Jassids and Cercopids. Differs from *Neocladia* in the occipital margin very acute, head viewed in front distinctly transverse; vertex and frons pustulate; club in female solid; antennae in male not ramose; mandibles with one acute tooth; abdomen long; ovipositor usually exserted and curved only at the very tip. The type species comes from Cuba. The genus occurs in Cuba, Porto Rico and India.

Type-species : Carabunia myersi Waterston

KEY TO SPECIES

1.	Body small; coxae yellow	*C. waterstoni* Subba Rao
	Body large; coxae not all yellow; middle coxae brown	2
2.	Club subequal to funicular segments 4-6	*C. myersi* Waterston
	Club shorter.	3
3.	Fore wings largely hyaline, infuscate only at tip; ocellocular space equal to ocellar diameter	*C. madhukari* (Mani & Kaul)
	Fore wings infuscate in the middle and in front; ocellocular space 1.50 times ocellar diameter	*C. orientalis* Subba Rao

Carabunia madhukari (Mani & Kaul)

(Fig. 237)

1973 *Coelopencyrtus madhukari,* Mani & Kaul, *Mem. School Ent.,* 2 : 72.
1973 *Carabunia longimarginalis,* Subba Rao, *Orient. Ins.,* 7 : 486.
1976 *Carabunia longimarginalis,* Subba Rao, *J. nat. Hist.,* 10 : 687.

Female : Length 2.75 mm. Body black; head with obscure metallic-blue reflections; antenna black, except brown scape and brownish-black pedicel; fore and middle legs predominently dark brown; hind leg predominently brown, tibia in the apical 0.50 and

tarsal segments, 3,4, and 5 brownish-black; wing hyaline with faint infuscation at tip; veins dark brown.

Head in front width to height 100 : 84, interorbital space at the insertion of antenna a little over 0.50 of head width; face transversely finely striolate, ocellocular and front ocellar spaces equal to ocellar diameter; vertex with a few shallow obscure punctae continuing downward on either side of the front ocellus and in a line on the inner orbital border; antenna inserted a little above the lower orbital border; segments 9, scape short, about 4 times as long as thick; pedicel a little less than 0.50 of scape; funicular segments 6; first funicular segment equal to the scape, 2.30 times pedicel; second and third funicular segments subequal, each about 0.50 of the first; 4-6 subequal, each a little shorter than the third; club solid; equal to the preceding 2 segments combined; a little longer than scape.

Pronotum thin and narrow; mesonotum : scutellum 5 : 4, mesonotum 1.40 times as wide as long, with obscure minute setigerous punctae; axillae contiguous, with a short carina, scutellum nearly as wide as long; more distinctly punctate than mesonotum; fore wing length to width 100 : 34; veins *sm : m : pm : st* ratio 1034 : 100 : 584 : 167; hind wing 0.70 of fore wing; middle femur 7 times as long as thick; tibia distinctly longer than femur; tip of tibia with a circle of black, thick and stout teeth; tibial spur a little shorter than metatarsus, 0.33 of tibia, with a row of 17 stout black teeth in the middle, below at the inner side; second segment 0.33 of metatarsus, with 6 teeth; third a little shorter than second with 6 teeth; third a little shorter than second with 6 teeth; fourth a little shorter than third with 4 teeth; fifth 1.25 times the fourth, with 4 teeth; hind femur a little compressed, shorter than middle femur and about 5 times as long as wide; tibia a little shorter than femur, tibial spur 0.50 of metatarsus; metatarsus about 0.33 of tibia; second about 0.40 of metatarsus; third and fourth segments subequal, each 0.75 of the second; fifth a little less than 2 times the fourth.

Abdomen a little less than 0.50 of body; ovipositor slightly exserted.

Type locality Dhenkund : Dalhousie

Distribution : India; Malaysia

Host : Cercopid on sugarcane

Carabunia orientalis Subba Rao

(Fig. 237)

1971 *Carabunia orientalis,* Subba Rao, *J. nat. Hist.*, 5 : 211.

Female : Body dark brown, with greenish to bluish reflections on the mesothoracic notum; scape, maxillary palpus, entire fore leg, middle leg except coxa; hind leg except distal part of femur, tibia

and tarsus lemon-yellow; funicle and club, middle coxa, hind tibia and tarsus and abdomen dark brown; fore wings with the distal 0.33 infuscated.

Head in front a little wider than long; eyes over 0.50 of head; gena long, about 0.60 of eye; scrobes not developed; vertex broad, ocellar triangle equilateral; ocellocular space 1.50 times their ocellar diameter; antenna long; scape longer than club or as long as the first 2 funicular segments combined; pedicel 0.50 of first funicular segment, second longer than the third; segments 3-5 almost equal and the sixth transverse; maxillary palpi with 4 and labial palpi with 3 segments.

Fore wings long, slightly less than 3 times as long as wide; vein *pm* longer than *st;* hind wing narrow, costal cell narrow, long.

Male : Not known.

Type locality Dacca (Bangladesh)

Host *Ptyelus nebulas* Jurton

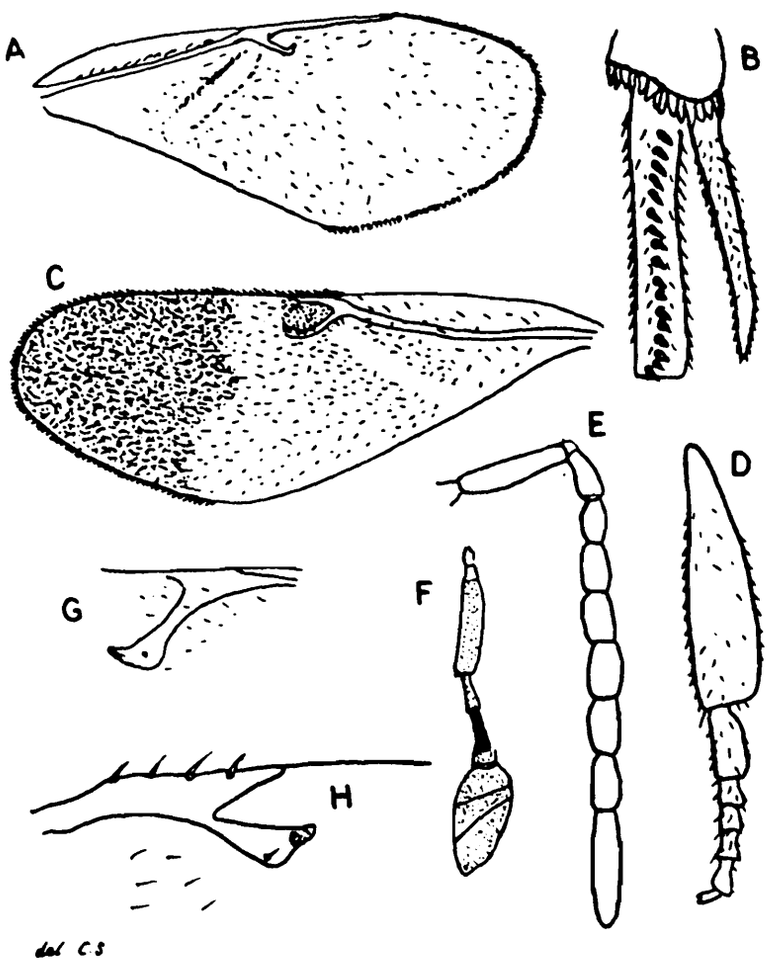

FIG. 237. A-B. *Carabunia madhukari* (Mani & Kaul), female : A. Fore wing; B. Tibia and tarsus; C-D. *Carabunia orientalis* Subba Rao, female; C. Fore wing; D. Hind tibia and tarsus; F-G. *Coccidencyrtus citri* Agarwal, female : G. Stigmal venation; F. Antenna; E-H. *Coccidencyrtus kumaoensis* Bhatnagar, male : E. Antenna; H. Stigmal venation.

Coccidencyrtus Ashmead

1875 *Encyrtus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 702 (preoccupied).
1900 *Coccidencyrtus,* Ashmead, *Proc. US nat. Mus.,* 22 : 383.
1904 *Coccidencyrtus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 302.
1909 *Coccidencyrtus,* Schmiedeknecht, *Gen. Ins.,* 97 : 237.
1921 *Coccidencyrtus,* Mercet, *Fauna Iberica,* 273.
1940 *Coccidencyrtoides,* Blanchard, *Ann. Soc. Cient. Argent.,* 130 : 107.
1952 *Coccidencyrtus,* Risbec, *Ent. Mem. Inst. Sci. Madagascar,* 2 : 46.
1961 *Coccidencyrtus,* Compere & Annecke, *J. ent. Soc. S. Africa,* 24 (1) : 59.
1961 *Coccidencyrtus,* Tshumakova, *Ent. Rev.,* 40 (2) : 323.
1963 *Coccidencyrtus,* Trjpitzin, *Ent. Rev.,* 42 (4) : 479.
1963 *Coccidencyrtus,* Hoffer, *Acta Ent. Mus. Nat. Prage,* 35 : 562.
1963 *Coccidencyrtus,* De Santis, *Ann. Com. Inv. Cient. Prov. Buenos Aires,* 4 : 219.
1965 *Coccidencyrtus,* Agarwal, *Acta Hymen.,* 2 (2) : 75.
1979 *Coccidencyrtus,* Krombein *et al.,* Hymen. N. America, 1 : 944.

Female : Body metallic; head as wide as thorax, convex; occipital border acute; ocellar triangle equilateral or acute angled; eyes moderately large, naked or hispid; mandible tridentate; maxillary palpi with 3-4 segments, terminal segment elongate, fusciform; labial palpi with 2-3 segments; antennae inserted near mouth, with 11 segments : 1.1.6.3; pedicel as thick as long; funicular segments short, almost moniliform, last 3 or 4 segments thicker than long; club cylindrical, as long as the funicle; slightly thickened, rounded or truncated apically; axillae contiguous or separate; scutellum wide, subconvex; fore wing hyaline, wide; vein *m* punctiform; *st* 3 times as long as *m, pm* distinct but short; speculum well marked; middle tibial spur stout, subequal to metatarsus; hind tibial spur double; abdomen short, oval or sub-triangular; ovipositor exserted; subgenital plate broad, convex on hind margin, notched in the middle, mid longtudinal groove reaching 0.50 of the plate; outer plates of ovipositor uniformly wide.

Male : Funicle longer and with a distinct club; funicular segments 2 times as long as thick, with 2 rows of hairs; scape short, slightly flattened; club entire, produced apically, subequal to the preceding 2 segments combined.

Type-species : Coccidencyrtus ensifer (Howard)

KEY TO SPECIES

1. Club equal to scape; vein *pm* subequal to *m* — *C. citri* Agarwal
   Club slightly longer than scape; vein *m* almost absent — *C. kumaoensis* Bhatnagar

Coccidencrytus citri Agarwal

(Fig. 237)

1965 *Coccidencyrtus citri,* Agarwal, *Acta Hymen.,* 2 (2) : 76.

Female Length 1.00 mm. Head dark brown; scape, pedicel and basal 5 funicular segments light yellow, sixth segment and club dark brown; thorax uniformly orange or light yellow with slight reddish reflections along anterior margin of scutum and apex of scutellum; wings hyaline; fore legs uniformly light yellow; middle legs and hind legs coloration same as on fore leg; abdomen black.

Head wider than long; face excavate; frontovertex narrow, 1.50 times longer than wide; eyes globose; ocellar triangle isosceles, lateral ocelli close to eye, about 2 times ocellar diameter from occipital margin; gena shorter than eye; antennae inserted close to oral margin; scrobes very deep, convergent, meeting above; mandibles with one tooth and a very broad truncation; maxillary palpi with 4 and labial palpi with 3 segments; scape almost cylindrical, more than 4 times longer than thick; pedicel 2 times longer than thick, longer than following 4 segments combined; first funicular segment subquadrate, remaining segments transverse; club much longer and thicker than funicle, equal to scape, obliquely truncated apically.

Pronotum broad, front margin notched in the middle, hind margin convex; mesoscutum and axillae setose; axillae narrowly separated; scutellum shagreened, convex, rounded apically, propodeum narrow in the middle; mesopostphragma broadly rounded apically; fore wings about 2.50 times longer than wide; costal cell broad; vein *m* short, less than 2 times as long as thick; vein *st* long, almost 2 times vein *m,* veins *pm* and *m* subequal; marginal fringe very short, spaced by a distance equal to 0.25 length of fringe; hind wings with long; marginal fringes more than 0.33 of wing width; spaced by a distance equal to 0.25 of length of a fringe; middle tibial spur subequal to metatarsus; metatarsus with 16 pegs in 2 rows of 8 each; hind tibial spur single.

Abdomen subtriangular, shorter than thorax; ovipositor concealed; cercal plates start near base; subgenital plate with posterior margin convex, with a notch in the middle, mid-longitudinal groove ascending to 0.50 of plate; outer plates of ovipositor uniformly wide, with thickened dorsal margin, truncate apically; third valvulae short, narrowly rounded apically, immovably articulated with second valvifers.

Type locality Aligarh

Host *Pseudococcus citri* Risso on *Citrus medica* L.

Coccidencyrtus kumaoensis Bhatnagar

(Fig. 237)

1951 *Coccidencyrtus kumaoensis,* Bhatnagar, *Indian J. Agric. Sci.,* 21 (2) : 163.

Male Length 0.95 mm. Head black; antennae light brown; scape dark and not reaching front ocellus; tegulae dark brown; legs

with the apices and base of all the femur, apical 0.50 of all the tibiae white; rest of legs dark brown, tarsi pale.

Head viewed above vertex narrow; ocellocular space less than interocellar space; vertex rugosely punctate, interocellar space 0.67 of interorbital space; front ocellar space 0.50 of interocellar; viewed in front oval; face below and near about toruli punctate like vertex; scrobe deep, prominent; antennae inserted on level of lower orbital border, sparsely setose; occiput nearly flat and punctate; antennal segments 9 : 1.1.6.1; scape cylindrical, 2.50 times as long as pedicel or the first funicular segment; pedicel 2 times as long as thick; equal to first funicular segment; funicular segments except the first subequal, club unsegmented, equal to the last 2 funicular segments combined, slightly longer than the scape.

Thorax nearly as broad as head; pronotum large, rectangular, closely punctate; mesonotum matt; mesopleurae with the femoral impression faint, closely punctate; disc of scutellum convex, sparsely punctate, wings hyaline, slightly less than 2.50 times as long as broad; vein *m* short, slightly longer than *st; pm* almost absent; *st* longer than broad; *sm* long and faint distad with a few long setae along the surface; marginal ciliation dense.

Abdomen as long as the thorax; tergites smooth.

Type locality : Kumaon Himalaya

Host Aphis helichrysi

Helegonatopus Perkins

1906 *Helegonatopus,* Perkins, *Bull. Hawaii. Sugar Planters' Assoc. exptl. Sta. Dic. Ent.,* 1 (8) : 257.

1918 *Helegonatopus,* Timberlake, *Proc. Hawaii. ent. Soc.,* 4 (1) : 185.

1925 *Helegonatopus,* Timberlake, *Proc. Hawaii. ent. Soc.,* 5 (3) : 432.

1931 *Helegonatopus,* Williams, *Handb. Ins. other Invest. Hawaii. Sugarcane Fields,* 255.

1963 *Helegonatopus,* De Santis, *Ann. Com. Invest. Cient. Buenos Aires,* 4 : 195.

1972 *Helegonatopus,* Szelenyi, *An. Hist. Nat. Mus. nat. Hungarici,* 64 : 347.

1978 *Helegonatopus,* Hayat & Verma, *Orient. Ins.,* 12 (3) : 355.

1979 *Helegonatopus,* Krombein *et al.,* Hymen. N. America, 1 : 932.

Female Head as wide as thorax, convex, occiput excavate, acute, frontovertex elongate, deeply punctate, scrobe shallow, eyes sparsely pubescent, ocellar triangle equilateral, ocellocular space equal to ocellar diameter; mandibles tridentate, teeth acute; maxillary palpi with 4 and labial palpi with 3 segments; antennae filiform, inserted between the mouth and lower orbital border; scape cylindrical; pedicel longer than first funicular segment; funicle with 6 segments, club slightly thickened, rounded apically, triarticulate, subequal to preceding 3 segments combined; mesonotum with reticulate setigerous punctae, axillae contiguous; scutellum convex,

strongly reticulate; fore wing subhyaline, vein *m* equal to *st, pm* short, speculum wide, well developed, complete; abdomen subtriangular, equal to head and thorax; ovipositor long.

Male : Eyes hairy, antennae long, pedicel much shorter than flagellar segments, club entire.

Type-species : Helegonatopus pseudophanes Perkins

Helegonatopus (Schedioides) pulchricornis Hayat & Verma

1978 *Helegonatopus (Schedioides) pulchricornis,* Hayat & Verma, *Orient. Ins.*, 12 (3) : 355.

Male : Length 0.96-1.20 mm. Body dark brown to blackish-brown, with metallic lustre; head dorsum bluish-green with some bronzy lustre; facial impression and gena with bronzy and golden lustre more intense than on dorsum; tooth below sockets dark brown, slightly shiny with silvery-white hairs; thorax with metanotum, propodeum and axillae black, latter with greenish tinge; mesoscutum bluish-green and bronzy; scutellum like mesoscutum but less intense bluish-green; tegulae blackish-brown; abdomen blackish-brown, with slight violet reflections; first tergite mainly bluish-green; scape yellow with brown; pedicel dusky-yellow with brown dorsal margin; club dark brown, apex yellow; first funicular segment whitish, with a dark brown patch; rest of funicular segments yellow to dusky yellow; funicular segment 6 sometimes dark brown distally; wings hyaline; legs yellow to slightly dusky-yellow; all coxae except apices, blackish-brown.

Head dorsum about 2.33 times wider than long; eyes slightly diverging from about lateral ocelli; frontovertex more than 0.33 of head width, somewhat wider than long; eyes not over-reaching occipital margin behind; occipital margin concave; ocellar triangle obtuse to almost equilateral, ocellocular space more than ocellar diameter; head in front 0.25 times wider than high; scrobes moderately deep, not meeting above; space below toruli with a well developed tooth; toruli nearly circular, removed from facial margin by a distance greater than diameter of upper margins above a level of lower orbital border; head dorsum with pale brown hairs, a row encircling each eye; eyes finely pubescent; head strongly reticulate, with some scattered aciculate punctae on vertex; mandibles tridentate, dorsal tooth small, middle long; scape robust; pedicel shorter than first funicular segment; funicular segments longer than thick; segments with long brown hairs; first segment distinctly longest; club unsegmented, slightly longer than or subequal to preceding 2 segments combined.

Pronotum finely reticulate; mesoscutum with reticulations strongly raised; scutellum finely reticulate, reticulations not as strong as on mesoscutum; axillae appear separate, being overlapped by the

median salient of mesoscutum; scutellum about as long as wide, broadly and evenly rounded from sides to apex, slightly longer than mesoscutum, with 8-10 pairs of brown setae; mesoscutum with numerous brownish setae; fore wings about 2.50 times longer than wide; vein *m* about 2 times as long as wide, as long as vein *st;* vein *pm* short; speculum complete; vein *sm* with about 10 setae; discal setae proximad of speculum pale to transparent, distad of speculum pale brown; marginal fringe short; hind wings 5 times as long as wide; discal setae in basal 0.50 transparent, in apical 0.50 pale brown; middle tibial spur 0.80 of metatarsus.

Abdomen equal to or a little longer than thorax; first tergite about 0.25 of abdomen; cercal plates about middle of abdomen, eighth tergite with its median length about 0.50 of its basal width; phallobase cylindrical, narrowed anteriorly, parameres well developed and each digitus with a strong, curved denticle.

Female : Length 1.00-1.23 mm. Frontovertex blackish-brown, faintly bronzy with some bluish-green sheen; face dark brown to black with violet and bronzy lustre; collar bronzy; mesoscutum and scutellum intense bluish-green; mesopleura violet, first tergite bluish-green, posteriorly bronzy, rest of abdomen predominantly bronzy with some bluish-green; antennae yellow, with dusky suffusions apically in club, basal 0.33 and dorsal and ventral margins distally of scape; radicle black; pedicel dorsally brown; wings and legs as in male.

Head thicker frontoccipitally, less than 2 times wider than median length; frontovertex about 0.33 of head width; ocellar triangle equilateral or slightly obtuse; ocellocular space equal to ocellar diameter; eyes parallel to about upper level of scrobe, then strongly diverging; head in front with scrobe not carinate on sides or above; interscrobal area slightly elevated; mouth fossa slightly less than 2 times the width of frontovertex; toruli almost oval, less than their own major diameter from facial margin, distance between sockets slightly more than that between a socket and lower eye margin; upper margin of socket below lower orbital border; gena shorter than in male, less than 0.50 of eye; scape cylindrical, more than 7 times as long as thick; pedicel longer than first funicular segment; funicular segments except sometimes sixth, longer than thick; club with 3 segments, equal to or a little longer than preceding 3 segments combined.

Pronotum dorsally as wide as mesoscutum, latter about 2 times wider than long; scutellum about as long as wide, slightly longer than mesoscutum, with 10-12 pairs of setae; otherwise thorax and wings as in male; middle tibial spur distinctly shorter than metatarsus.

Abdomen as long as thorax; cercal plates about basal 0.33 or slightly distad; ovipositor as long as middle tibia, third valvulae a little longer than middle tibial spur; hypopygium transverse with a

deep notch in the middle of posterior margin, anterior margin convex in the middle; eighth tergite triangular, with apex truncate and its basal width slightly more than 2 times the median length; exserted part of ovipositor about 0.13-0.17 of abdomen.

Type locality : Aligarh

Distribution India : Uttar Pradesh, Aligarh

Indoencyrtus Hayat & Verma

1978 *Indoencyrtus,* Hayat & Verma, *Orient. Ins.,* 12 (3) : 361.

Head 2 times wider than long; eyes glabrous; occiput rounded; ocellar triangle obtuse; ocellocular space less than ocellar diameter; scrobes shallow, with a narrow median longitudinal elevation; antennae inserted a little above the level of lower orbital border; mandible tridentate; maxillary palpi with 4 and labial palpi with 3 segments; antennae with 12 segments; scape slightly flattened; funicular segments one and 2 longer than thick; club triarticulate, pointed apically; pronotum angulate in the middle; axillae distinctly separate; scutellum flat; fore wings hyaline, 2.50 times longer than wide; vein *m* slightly longer than *st; pm* short; middle tibial spur short; abdomen equal to thorax; first tergite 1.50 times the second; ovipositor not exserted.

Type-species : Indoencyrtus caeruleus Hayat & Verma

This genus is related to *Trjpitzinellus* Viggiani, but is separated by glabrous eyes, not reaching occipital margin, which is rounded; shallow scrobe; club reduced apically, not truncate; abdomen and thorax subequal and not unequal; scutellum not convex but flat; vein *pm* much shorter than *m* and not subequal to *m*.

Indoencyrtus caeruleus Hayat & Verma

1978 *Indoencyrtus caeruleus,* Hayat & Verma, *Orient. Ins.,* 12 (3) : 962.

Female : Length 1.25-1.40 mm. Body generally bluish-green to dark bluish-green; face with coppery reflections; axillae brown; abdomen with coppery reflections; mesopleura dark brown; antennae yellow; pedicel brown above; wings hyaline; except yellow femora and base and tips of middle and hind tibiae and hind legs, rest of legs black.

Head finely reticulate; thorax reticulately-punctate; scutellum more finely reticulate than mesonotum.

Male . Frontovertex about 0.50 of width of head; antennae inserted higher than in female, dirty yellow; pedicel brown above,

shorter than first funicular segment; phallobase almost cylindrical, slightly narrowed in front; digitus with strong curved denticle.

Type locality Aligarh
Distribution : India

Erencyrtus Mahdihassan

1923 *Erencyrtus,* Mahdihassan, *J. Sci. Assoc., Maharajas Coll. Vizinagram,* 1 : 71.
1938 *Erencyrtus,* Mani, *Cat. Indian Ins.,* 23 : 93.

Female : With a very long club, like in *Eretmocerus* (Aphelinidae) in the male. It is said to be related to *Lissencyrtus* Cameron. Similar long club occurs also in *Habrolepis* Förster, but the females differ in the shape of head and antennae, hyaline wings and absence of scutellar appendages.

Type-species : Erencyrtus dewitzii Mahdihassan

Erencyrtus dewitzii Mahdihassan

1923 *Erencyrtus dewitzii,* Mahdhihassan, *J. Sci. Assoc. Maharajas Coll. Vizinagram,* 1 : 70.
1935 *Erencyrtus dewitzii,* Ferrière, *Bull. ent. Res.,* 26 : 396.
1938 *Erencyrtus dewitzii,* Mani, *Cat. Indian Ins.,* 23 : 93.
1940 *Erencyrtus dewitzii,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 16.

Female : Length 0.80-1.40 mm. Head green, with purple reflections, especially between acrobes; antennae yellow, slightly brown above on pedicel and funicle; thorax orange-yellow; pronotum brown in front and a green oval spot covering the posterior part of pronotum and anterior 0.33 of mesonotum; propodeum and metanotum brown laterally; abdomen brown, more or less yellow at base; legs yellow, with a small brown spot in the middle and hind tibiae near base; wings hyaline; in head darker and mesonotum entirely greenish above.

Head transverse, as wide as thorax; vertex broad; ocelli very near eyes; vertex and face granulose, dull with a few scattered, larger punctae; scrobes converging and combining before front ocellus; cheeks large, rounded, with a short vertical furrow below eyes; mandibles with 3 teeth; antennae inserted just above clypeus; scape a little thickend in the middle, not reaching front ocellus; pedicel 2 times as long as thick; first 5 funicular segments small, subquadrate, narrower than pedicel, sixth segment a little larger almost quadrate; club oval, almost as long as funicle.

Thorax short, oval, finely shagreened; mesonotum broader than long; axillae contiguous; scutellum large, almost as long as mesonotum, very convex and rounded behind, covering the middle

of propodeum, which very short and transverse; wings large, reaching beyond the tip of abdomen; vein *sm* reaching almost the middle of front margin; vein *m* punctiform or scarcely longer than broad; veins *st* and *pm* subequal; behind stigma speculum, before which the discal ciliae a little stronger; middle tibiae spurs subequal to metatarsus; hind femora somewhat thickened.

Abdomen shortly oval, not or scarcely longer than thorax; ovipositor not exserted.

Male : Length 0.90-1.00 mm. Similar to female, from which it differs in scape, about 3 times as long as thick in the middle, the short pedicel as long as thick, 2 small funicular segments, transverse, not easily seen, club formed by one very elongate segment, 3 times or more as long as scape, covered with short hairs.

Type locality Mysore

Distribution Mysore, Ranchi; Pakistan

Neocladia Perkins

1906 *Neocladia,* Perkins, *Bull. Hawai. Sugar Planters' Assoc. exptl. Sta. Div. Ent.* 1 (8).

1921 *Neocladia,* Mercet, *Fauna Iberica,* 43.

The original description is not available to me. One species, placed under here, is transferred from *Coelopencyrtus* on the authority of Subba Rao.

Neocladia shadsaka (Mani & Kaul)

1973 *Coelopencyrtus shadsakus,* Mani & Kaul, *Mem. School Ent.*,2 : 74.

1976 *Neocladia shadsakus,* Subba Rao, *J. nat. Hist.*, 10 : 687.

Male Length 2.00 mm. Body steel-blue and metallic-green; antenna brownish-black, fore femur at basal 0.75 of brownish-black, rest brown; middle femur and tibia almost brownish-black except tips; hind leg black with metallic-blue reflections; wings hyaline with brown infuscation; veins brown.

Head in front width to height 100 : 76, face umbilicately punctate, punctae distinctly separated by their own diameter; mandible tridentate; labrum prominent; ocellocular space equal to ocellar diameter; front ocellus widely separated from the lateral ocellus; antenna inserted on level of lower orbital border; segments 9; scape stout, about 3 times as long as thick; pedicel about 0.25 of scape; funicular segments 6; first segment nearly 3.50 times pedicel; second and third subequal, each 0.80 of the first; fourth and fifth subequal, each 1.25 times the third; sixth a little longer than fifth; all funicular segments branched; club elongate, slender,

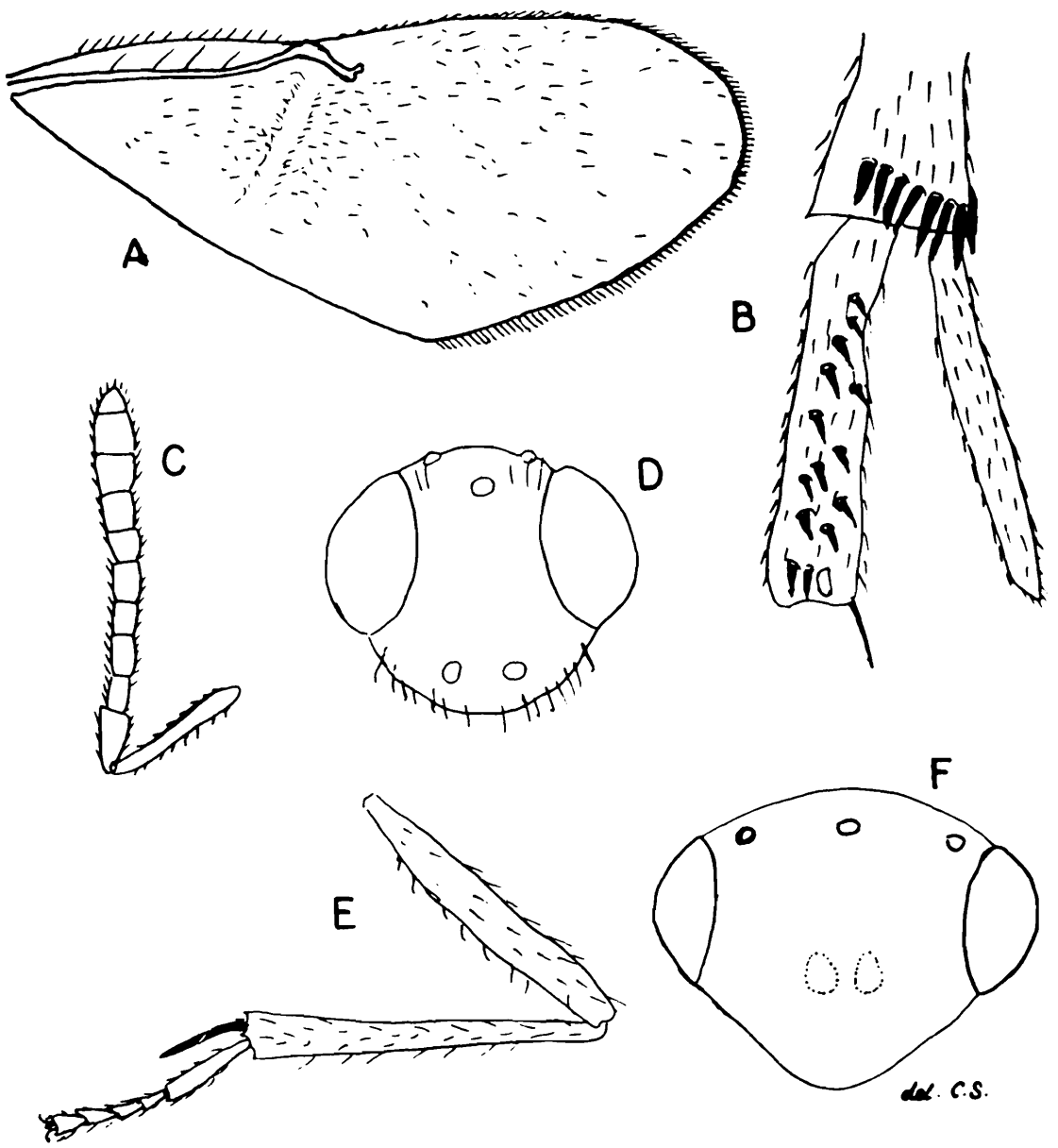

Fig. 238. *Neocladia shadsaka* (Mani & Kaul) : A. Fore wing, female : B. Tip of middle tibia and metatarsus, female; C. Antenna, female; D. Head in front view, female; E. Middle leg, male; F. Head in front view, male.

equal to about preceding 2.50 segments combined, a little over 2 times scape, 5 times as long as thick.

Pronotum about 2.50 times as wide as long, with obscure, shallow punctae, otherwise with fine microshagreen; axillae contiguous, with a short carina; scutellum 1.80 times mesonotum, 1.30 times as long as wide, obscurely and coarsely reticulate; fore wing length to width 100 47, veins *sm m pm : st* ratio 785 : 100 : 300 : 230; hind wing 0.70 of fore wing, about 3 times as long as wide; fore femur stout 4 times as long as thick; tibia 0.80 of femur; tarsus equal to tibia, tibial spur a little longer than metatarsus; metatarsus about 0.33 of tibia; second and third segments subequal, each 0.50 of metatarsus, fourth shorter than third; fifth 2 times the fourth; middle leg long and slender, femur about 1.40 fore femur; tibia

distinctly longer than femur, tip of tibia with black sharp teeth; metatarsus 0.26 of tibia; tarsal segments 2-5 subequal, each about 0.33 of metatarsus; metatarsus with 9, second tarsal segment with 3 black and stout sharp tarsal teeth beneath; hind femur distinctly shorter than middle femur, compressed, about 3.50 times as long as wide; tibia compressed above, a little longer than femur, about 3 times as long as wide, tibial spur a little over 0.50 of metatarsus metatarsus 0.33 of tibia; second tarsal segment 0.27 of metatarsus; third and fourth segments subequal, each a little shorter than the second; fifth 2 times the fourth.

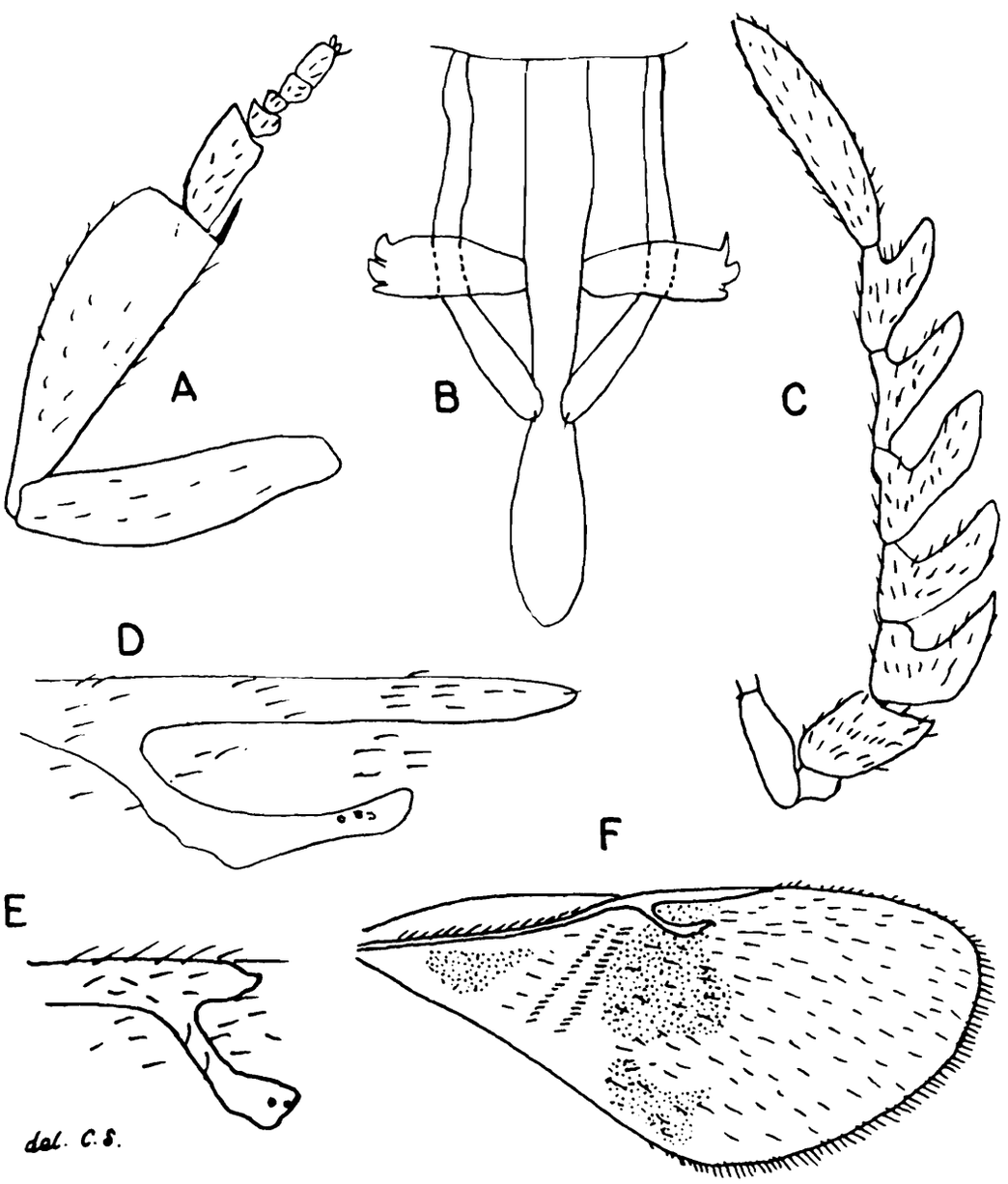

FIG. 239. *Neocladia shadsaka* (Mani & Kaul) : A. Hind leg, male; B. Genitalia, male; C. Antenna, male; D. Stigmal venation, male; E. Stigmal venation, female; F. Fore wing, male.

Abdomen a little less than 0.50 of body.

Female : Length 2.20 mm. Body black; scape and pedicel brownish-black; fore femur and tibia largely black; tarsus brownish-black; middle leg brownish-black; distal 0.50 of hind tibia black, rest brownish-black wings hyaline with some infuscation apically; venation dark bown.

Head in front width to height 100 : 83; interocellar space about 0.50 of ocellar diameter; ocellocular space 3 times ocellar diameter, front ocellar space 2.50 times ocellar diameter; face with fine microscopic striolations, otherwise with a few scattered shallow punctae; antenna inserted below the level of lower orbital border, segments 11; scape slender, a little over 0.25 of antenna, pedicel about 0.40 of scape; funicular segments 6, subequal, gradually transverse apically; each about 0.66 of pedicel, club nearly equal to preceding 3 segments combined.

Pronotum : mesonotum : scutellum 2 : 15 : 15; pronotum narrow, about 10 times as wide as long; mesonotum width 2 times length; scutellum almost as wide as long; axillae contiguous; mesonotum with well separated, minute, setigerous punctae; scutellum punctate only at base and side, smooth in the middle and behind; fore wing length to width 100 : 44, veins *sm m pm st* ratio 843 : 100 : 71 : 143; hind wing 0.66 fore wing; fore femur stout; tibia a little longer than femur, with a circlet of stout teeth at tip; tibial spur subequal to metatarsus; metatarsus a little less than 0.50 of tibia; tarsal segments 2-3 subequal, each 0.20 of metatarsus; fifth segment 0.70 of the fourth; hind femur compressed, a little shorter than middle femur, a little over 3 times as long as wide; tibia about 1.20 times femur, tibial spur about 0.50 of metatarsus; metatarsus 0.33 of tibia; second tarsal segment 0.40 of metatarsus; third segment 0.75 of the second; fourth 0.80 of the third; fifth 1.80 times the fourth.

Abdomen a little over 0.50 of body; ovipositor slightly exserted.

Type locality : Berijam Lake (Kodaikanal Hills)

Ooencyrtus Ashmead

1875 *Encyrtus* (partim) Mayr, *Verh. zool.-bot. Ges. Wien,* 25 :702.
1803 *Encyrtus* (partim) Ashmead, *Bull. Ohio expt. Sta.,* 163.
1900 *Ooencyrtus,* Ashmead, *Proc. US nat. Mus.,* 22 : 381.
1904 *Ooencyrtus,* Ashmead, *Mem, Carnegie Mus.,* 1 (4) : 302.
1909 *Ooencyrtus,* Schmiedeknecht, *Gen. Ins.,* 97 : 238.
1910 *Schedius,* Howard, *Bur. Ent. US Dept. Agr. (Tech. Ser.)* 19 (1) : 2-3.
1921 *Ooencyrtus,* Mercet, *Fauna Iberica,* 297.
1923 *Ooencyrtus,* Timberlake, *Proc. ent. Soc. Washington,* 25 (3) : 59.
1925 *Ooencyrtus,* Mercet, *Eos,* 1 (3) : 324.
1931 *Ooencyrtus,* Ferrière, *Bul. ent. Res.,* 22 (2) : 281.
1938 *Ooencyrtus,* Mani, *Cat. Indian Ins.,* 23 : 89.
1963 *Ooencyrtus,* Hoffer, *Acta Ent. Mus. Nat. Pragae,* 35 : 560.

1965 *Ooencyrtus,* Bakkendorf, *Ent. Meddel.,* 30 (2) 158.
1967 *Ooencyrtus,* Trjpitzin, *Trudy Akad. Nauk Zool. Inst.,* 41 : 198.
1979 *Ooencyrtus,* Krombein *et. al.,* Hymen. N. America, 1 : 953.

Female : Head highly convex; eyes large, almost glabrous; frons elongate; ocellar triangle almost equilateral; lateral ocelli well separated from frontocelli; mandible with one denticle or truncature; maxillary palpi with 4 and labial palpi with 3 segments; antennae inserted close to mouth, with 11 segments : 1.1.6.3; scape slightly expanded in the middle below; pedicel thicker than scape and first funicular segment; funicular segments thicker apically than basally; club stouter than funicular segments but shorter; slightly truncate apically.

Scutum entire; axillae contiguous; scutellum large, convex rounded apically; propodeum almost linear; fore wing broad; marginal fringe short; vein *m* punctiform, as long as thick; *st* equal to *pm;* middle tibial spur subequal to metatarsus; hind tibial spur single.

Abdomen short.

Type-species : Ooencyrtus clisiocampae (Ashmead)

KEY TO SUBGENERA

1. Ovipositor prominently exserted; gena flat; outline of head from in front triangular; funicular segments and club parallel with rhinaria; club thicker than preceding segments; scutellum not broad, strongly arcuate; vein *m* at least 2 times as long as wide; *st* short, triangular; in male funicular segments strongly elongate, cylindrical, with thick, uniform, in distal part curved hairs about as long as width of segments; mandibles with 2 outer teeth of normal shape and as stout inner tooth diverging from axis of mandible; metallic- green forms. *Tatranus* Hoffer

Ovipositor concealed, or only slightly exserted; gena convex; outline of head from in front subcircular; funicular segments thicker towards tip; club thicker than funicle; scutellum flat or moderately arched; vein *m* very slightly elongate or quadrate; *st* normally developed. 2

2. Club moderately truncate; antennae in male with wide segments, first funicular segment much longer than following ones, at base border than at apex, flagellum with very short, fine, and thick hairs; mandibles with 2 teeth and short truncature. *Ooencyrtoides* Hoffer

Club pointed at end, antennae in female different 3

3. Head from above sub-semi-lenticular; gena short, very strongly convex; fronts broader than eyes; vein *m*punctiform; *pm* well developed; funicular segment in male with row of rhinaria in distal 0.33; in male funicular segment flat, covered with rather short, not vein dense hair; first funicular segment somewhat shorter than following, at base narrower than at end; all funicular segments with small black mark at distal edge, on apical segments less distinct; reticulate suclpture very minute, fine making the surface waxy-lustrous; mandibles with one tooth and broad, straight truncature. *Ooencyrtellus* Hoffer

Head from above oval; gena of normal length and convexity; frons not very wide; vein *m* moderately elongate; *pm* short; in male funicular segments cylindrical, with long and rather sparse hairs; sulpture normally reticulate, lustrous; mandibles with one outer tooth and truncature, or with one more not very well defined median tooth *Ooencyrtus s. str.*

Ooencyrtus ferrièrei Shafee, Alam & Aligarh

(Fig. 240)

1975 *Ooencyrtus ferrièrei,* Shafee, *et. al., Aligarh Muslim Univ. Mon.,* (Zool.) 10 : 97.

Female : Length 1.26mm. Body dark brown, with metallic reflections ; head dark brown ; wings hyaline ; antennae yellowish-brown ; wings hyaline, legs yellow, tarsi yellowish-brown ; hind metatarsus brown ; apical 0.75 dorsally and 0.33 ventrally of abdomen brown, rest of abdomen yellow.

Head in front wider than long, frontovertex about 0.33 of head width, slightly longer than wide ; ocellar triangle obtuse-angled ; ocellocular space 0.75 of ocellar diameter ; ocelloccipital space equal to ocellar diameter; eyes bare; gena equal to eye; scrobes deep, converging above; antenna inserted just below the level of lower orbitral border; prominence between antennal sockets less wide than width of frontovertex; mandibles with one tooth and a broad truncation; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape 5.50 times longer than thick; pedicel slightly shorter than the following 2 funicular segments combined; funicular segments 1-5 longer than thick, sixth as long as thick; segments 1, 3 and 5 subequal, 4 longest, 6 as long as 2; club 3 times as long as thick and equal to the preceding 3 funicular segments combined.

Scutum less than 2 times as wide as long; axillae triangular, widely separated; scutellum slightly longer than wide, as long as scutum; mesopostphragma broadly truncated at apex; fore wings

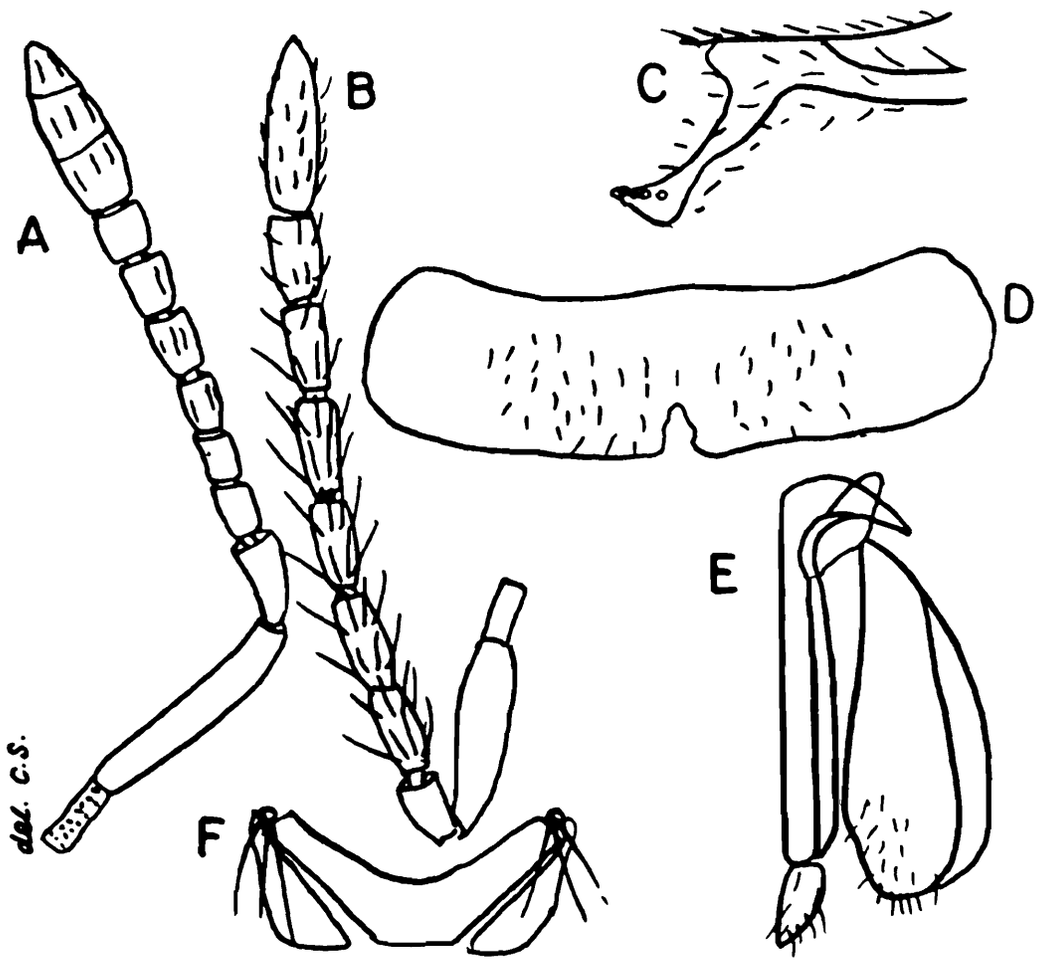

FIG. 240. *Ooencyrtus ferrierei* Shafee *et al* : A. Antenna, female; B. Antenna, male; C. Stigmal venation, female; D. Subgenital plate, female; E. Genitalia,female; F. Apex of abdomen, female.

slightly more than 2 times longer than wide; costal cell broad; vein *sm* long with 11 long setae; vein *m* slightly longer than thick, about 0.50 of *st,* vein *pm* indicated; marginal fringe short, separated by 0.33 of their length; hind wing slightly more than 4 times longer than wide; marginal fringe short, spaced by a distance equal to 0.25 of their length; middle tibia with 5 stout pegs at apex; spur shorter than metatarsus; abdomen shorter than thorax.

Male : Length 1.40 mm. Differs from female as follows : head with gena suture distinct; pedicel shorter than first funicular segment; funicular segment distinctly longer than thick; club entire, equal to preceding 2 funicular segments combined.

Type locality Pantnagar

Ooencyrtus papilionsis Ashmead

(Fig. 241)

1905 *Ooencyrtus papilionis,* Ashmead, *Canad. Ent.,* 37 : 4-6.

1939 *Ageniaspis pyrillae,* Mani, *Indian J. Ent.,* 1 (1 & 2) : 72.

1940 *Ageniaspis pyrillae,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 15.
1979 *Ooencyrtus papilionis,* Subba Rao, *Orient. Ins.,* 13 (1-2) : 147.

Female : Length 0.75 mm. Head black; eyes finely pubescent; scape brown; flagellum dark brown; thorax black, propodeum dark brown; legs pale brown or white; abdomen pale yellow, somewhat dusky above near apex.

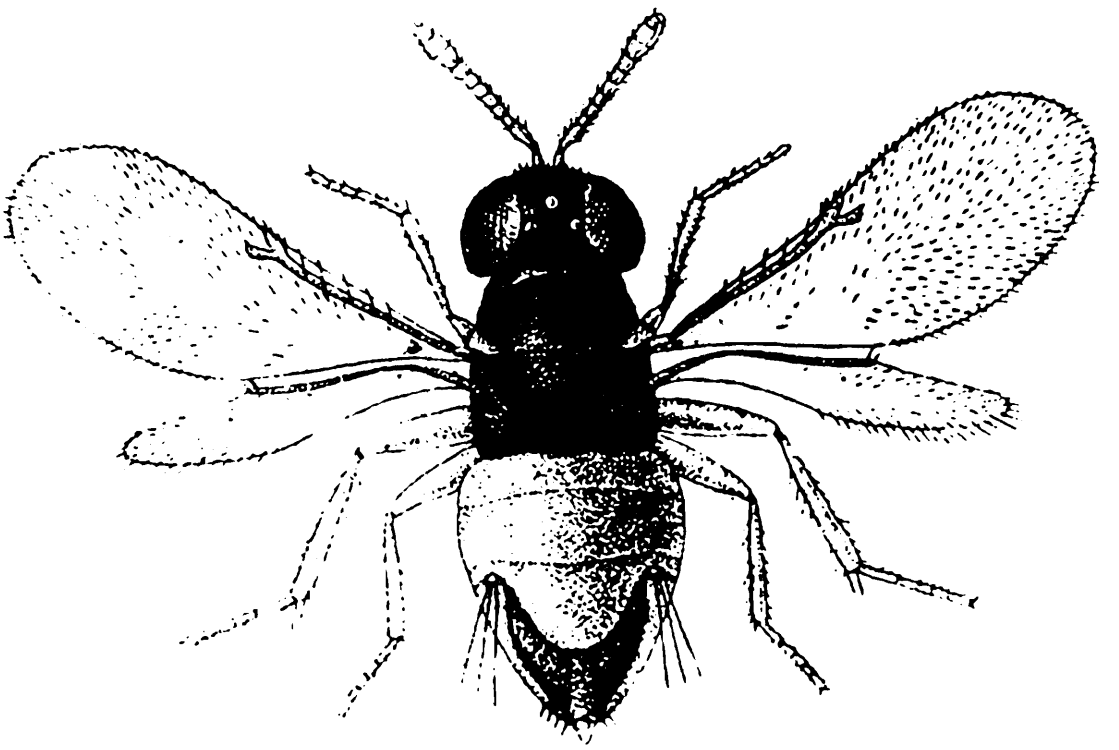

FIG. 241. *Ooencyrtus papilionis* Ashmead, female.

Ocellocular space less than ocellar diameter, pedicel about 2 times as long as broad; first funicular segment less than 0.50 as long; second and third similar; fourth somewhat longer than thick; fifth 1.50 times the first, thicker; sixth equal to fifth but much thicker; club 2 times the pedicel, somewhat longer than preceding 3 segments combined, very much thicker than funicle; basal 2 segments equal, terminal segment short and broadly pointed.

Axillae distinctly separated; fore wing 3 times as long as broad; vein *pm* slightly longer than *m; st* much longer

Male : Like female, but smaller; antennae longer

Type locality : Philippines

Distribution : India : Delhi, Aligarh; Philippines.

Host : Eggs of *Pyrilla* sp. and *Papilio* sp.

SPECIES INCERTAE SEDIS

Ooencyrtus pyrillae Crawford

1926 *Ooencyrtus pyrillae,* Crawford, *Insec. Inscit. Menstr.,* 4 : 101.
1931 *Ooencyrtus pyrillae,* Ferrière, *Bull. ent. Res.,* 22 : 286.
1938 *Ooencyrtus pyrillae,* Mani, *Cat. Indian Ins.,* 23 : 89.
1940 *Ooencyrtus pyrillae,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 15.

Type locality : Pusa
Distribution : India
Host : Pyrilla aberrans

Psyllaephagus Ashmead

1900 *Psyllaephagus,* Ashmead, *Proc. US nat. Mus.,* 22 : 382.
1902 *Psyllaephagus,* Ashmead, *Canad. Ent.,* 34 (11) : 302.
1904 *Psyllaephagus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 302.
1909 *Psyllaephagus,* Schmiedeknecht, *Gen. Ins.,* 97 : 238.
1921 *Psyllaephagus,* Mercet, *Fauna Iberica,* 699.
1921 *Metaprionomitus,* Mercet, *Fauna Iberica,* 27, 58, 70, 81, 260-261.
1922 *Psyllaephagus,* Waterston, *Bul. ent. Res.,* 13 (1) : 42.
1926 *Psyllaephagus,* Ferrière, *Ann. Soc. ent. France,* 95 (2) : 191.
1926 *Psyllaephagus,* Gahan and Waterston, *Bul. ent. Res.,* 16 (4) : 373.
1926 *Psyllaephagus,* Mercet, *Eos,* 2 (4) : 313.
1928 *Shakespearia,* Girault, *Some New Hexapods Stolen from Authority,* 3 (priv. Publ.)
1957 *Psyllaephagus,* Alam, *Trans. R. ent. Soc. London,* 109 (15) : 423, 456.
1961 *Psyllaephagus,* Ferrière, *Entamophaga,* 6 (1) : 42.
1962 *Psyllaephagus,* Riek, *Austral. J. Zool.,* 10 (4) : 684.
1962 *Calluniphilus,* Erdös, *Acta Zool.,* (Budapest) 7 (3-4) : 413-414.
1965 *Mercetia,* Bakkendorf, *Ent. Meddel.,* 30 (2) : 139, 140.
1967 *Psyllaephagus,* Trjpitzin, *Trudy. Akad. Nauk. Zool. Inst.,* 41 : 190.
1968 *Psyllaephagus,* Trjpitzin, *Trudy Vses. Ent. Obshch.,* 52 : 54.
1969 *Psyllaephagus,* Graham, *Polskie Pismo Ent.,* 39 (2) : 248.
1979 *Psyllaephagus,* Krombein, *et. al.,* Hymen. N. America, 1 : 960.
1981 *Psyllaephagus,* Trjpitzin, *Entomophaga,* 26 (4) : 395-399.

Female : Head finely shagreened, without large punctae; occipital border a little acute; vertex and frons more or less equal to eye; ocelli in a equilateral triangle; ocellocular space equal to ocellar diameter; eyes large, pubescent, major diameter of eye more than transverse diameter; antenna inserted midway between mouth border and level of lower orbital border; segments 11 : 1.1.6.3; scape large, slightly compressed apically; pedicel larger than the following segments; funicular segments subequal, apically a little thicker than basally; club much larger than funicle, slightly truncated apically.

Thorax without parapsidal furrows; axillae contiguous, slightly convex. wings large, hyaline; vein *m* punctiform; vein *pm* equal to *st;* marginal fringe short.

Abdomen suboval, much shorter than thorax; ovipositor not exserted.

Type-species : Psyllaephagus pachypsyllae (Howard)

This genus is related *Ooencyrtus* Ashmead, but the difference is in the sculpture of head, ovipositor not exserted and antenna not being as hairy as in *Ooencyrtus* Ashmead.

KEY TO SPECIES

1. Pedicel longer than first 2 funicular segments combined; club longer than preceding 4 funicular segments combined; funicular segments 1-3 as long as thick, 4-6 thicker than long; parasites of coccid *Asterolecanium variolosum* (Ratzb.)	*P. cocci* Alam*
Pedicel equal to the first 2 funicular segments combined; club shorter than preceding 4 funicular segments combined; first funicular segment shortest, as long as thick, segments 2-6 subequal gradually thicker apically; vein *pm* slightly more than 0.50 of *st*	*P. aligarhensis* Shafee *et al.*

Psyllaephagus aligarhensis Shafee, Alam & Agarwal

(Fig. 242)

1975 *Psyllaephagus aligarhensis,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 100.

Female : Length 1.14 mm. Body dark brown, with metallic green reflections; head dark brown with metallic-blue-green reflections; eyes reddish-brown; antennae dark brown; thorax dark with, metallic-green reflections; wings hyaline; legs orange-yellow; coxae concolorous with body; abdomen dark brown with metallic-green reflections.

Head reticulate, wider than long; ocellar triangle equilateral; ocellocular and ocelloccipital spaces equal to ocellar diameter; eyes bare; gena slightly less than eye; scrobes deep, converging above; antennae inserted just below the level of lower orbital border; mandibles with one tooth and one broad truncature; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape more or less cylindrical, less than 4 times longer than thick; pedicel slightly less than 2 times longer than thick; subequal to the following 2 funicular segments combined; first funicular segment shortest, about as long as thick; funicular segments 2-6 subequal, gradually thickened apically; club as long as preceding 3 funicular segments combined.

* I have not seen specimens of this species and the original description is not also available to me.

Axillae contiguous; scutellum longitudinally reticulate, rounded behind; fore wings slightly less than 2.50 times longer than wide; costal cell broad; vein *m* quadrate, not touching the wing margin; vein *pm* longer than *m* and distinctly shorter than *st;* hind wings about 4 times longer than wide; middle tibial spur equal to metatarsus; 9 stout pegs at tip of middle tibiae.

Abdomen as long as thorax; subgenital plate with distinct anterolateral apodemes, middle of anterior margin connected with central notch of posterior margin by longitudinal groove.

Type locality : Aligarh

Host : Diaphorina citri

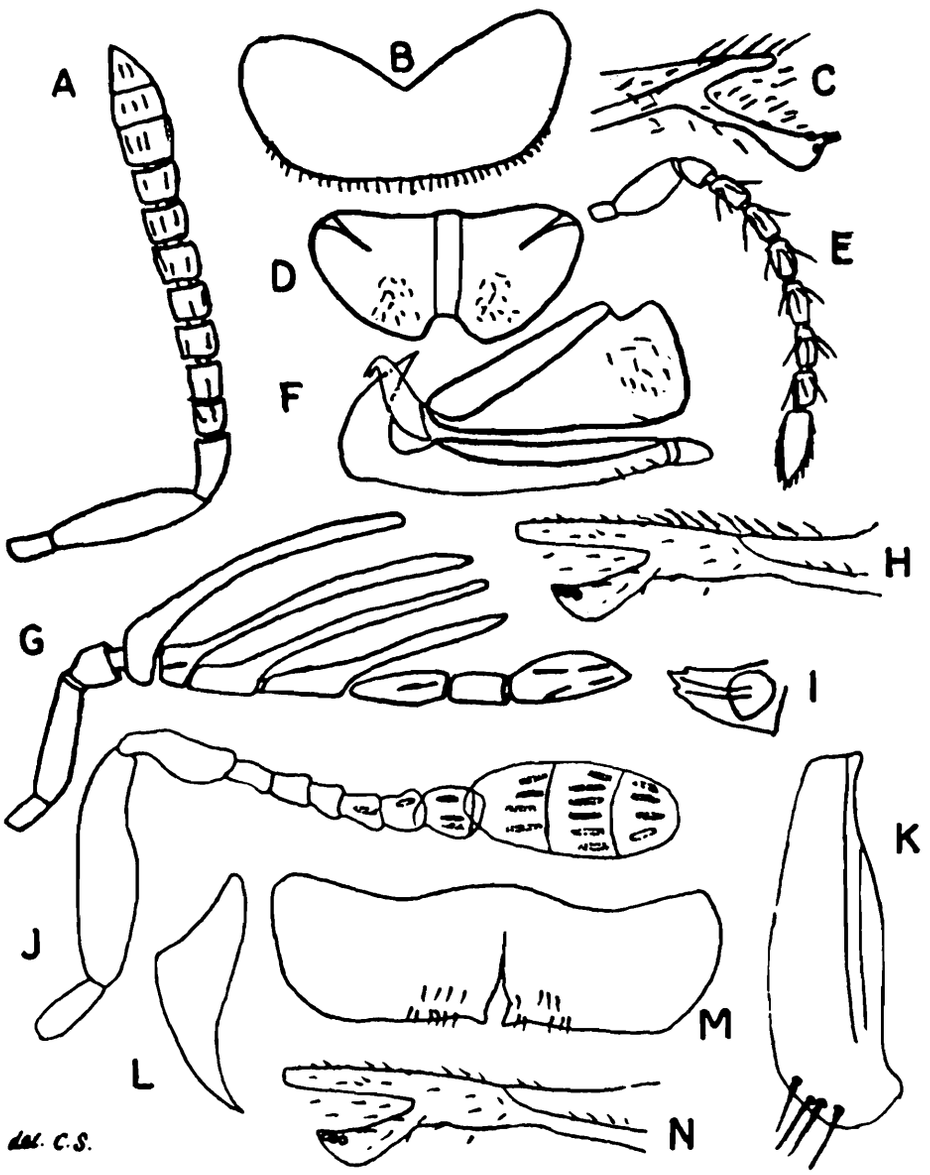

FIG. 242. A-F. *Psyllaephagus aligarhensis* Shafee *et al :* A. Antenna, female; B. Pronotum, female; C. Stigmal venation, female; D. Subgenital plate, female; E. Antenna, male; F. Genitalia, female; G-I. *Parablastothrix indicus* Shafee *et al.*, male : G. Antenna; H. Stigmal venation; I. Mandible; J-N. *Parageniaspis indicus* Alam, female : J. Antenna; K. Outer plate ovipositor; L. First valvifer; M. Subgenital plate; N. Stigmal venation. *(Modified from different authors).*

Psyllaphycus Hayat

1972 *Psyllaphycus,* Hayat, *Acta ent. bohemoslov.*, 69 : 207.

Female : Head front wider than long; gena as long as eye; with suture; scrobes triangular; toruli above facial margin by a distance equal to 0.75 of socket; mandibles with one acute tooth and a broad dorsal truncature; maxillary palpi with 4 and labial palpi with 3 segments; scape cylindrical; pedicel longer than following 2 funicular segments combined; funicular segments 6, slightly longer than thick, sixth segment large, club shorter than funicule; pronotum of almost uniform width, front margin truncate; mesoscutum without parapsidal sutures; axillae broadly joined; scutellum a little wider than long, rounded apically; mesopostphragma with a notch at apex; wings hyaline; speculum complete; vein *m, pm* and *st* subequal; abdomen as long as thorax; cercal plates situated at about middle of abdomen; subgenital plate reaching upto middle of abdomen, thus covering only the basal 0.50 of ovipositor, transverse, with anterior margin straight, posterior margin with a small notch in the middle, sides of notch with sclerotic knobs, knobs continued laterally into fine ridges; outer plates of ovipositor narrowed at base, gradually widening behind with a submarginal ridge running up to 0.75 length of plate; third valvulae movably articulated with second valvifers; first valvifers triangular; ovipositor issuing from near base of abdomen; concealed.

Type-species : Psyllaphycus diaphorinae Hayat

This genus does not seem to be related to any of the known Encyrtid genera infesting Psyllids. It is closely related to the coccid-inhabiting genera *Aphycopsis* Timberlake and *Aphycomorpha* Timberlake.

Psyllaphycus diaphorinae Hayat

1972 *Psyllaphycus diaphorinae,* Hayat, *Acta ent. bohemoslov.*, 69 : 208.

Female : Length 1.16 mm. Head yellow, with a small brown patch on above occipital foramen; frontovertex micro-reticulate, with a few brown setae; ocellar triangle obtuse; antennae yellow, club faintly dusky; thorax yellow with sides and venter pallid, a large patch on pronotum, sides of propodeum brown; dorsum smooth; coloured areas of pronotum and propodeum with fine reticulations; hind margin of pronotum with 19 setae; mesoscutum and scutellum with short brown setae, apex of scutellum with a pair of long setae; wings hyaline; legs whitish-yellow, last tarsal segments of all legs dusky; abdomen yellow.

Fore wings a little over 2 times longer than wide; marginal fringe short; hind wings 4 times as long as wide; marginal fringe longer

than in fore wings; middle tibial spur longer than metatarsus; tip of tibia and tarsal segments 1-4 with 6, 10,5 and 4 and 3 pegs respectively.

Abdomen as long as thorax; ovipositor not exserted.

Male . Length 1.13 mm. Differs from female as follows : Body orange-yellow; a dusky patch between ocelli, occiput above foramen with a large brown patch, pronotum with a larger brown patch in the middle; mesoscutum except 2 triangular areas posterolaterally; axillae mesially and whole of scutellum dark brown, slightly shining; metanotum and sides of propodeum dark brown; front margin of first tergite in the middle, tergites 3-6 except sides and tenth tergum apically concolorous with sides of propodeum, rest of abdomen white; legs yellow.

Type locality India : Punjab

Host : Diaphorina on *Cordia myxa*

Parablastothrix Mercet

1917 *Parablastothrix,* Mercet, *Bol. Soc. Esp. Hist. Nat.,* 17 : 538.
1921 *Parablastothrix,* Mercet, *Fauna Iberica,* 251.
1932 *Parablastothrix,* Mercet, *Liv. Cent. Soc. ent. France,* 8 : 685.
1955 *Parablastothrix,* Erdös, *Ann. Hist. Nat. Budapest, Magyr. Nemz., Mus.,* 6 : 292-294.
1963 *Parablastothrix,* Erdös, *Beitr. Zur. Ent.,* 13 (3-4) : 285.
1965 *Parablastothrix,* Miller, *Canad. Ent.,* 97 (7) : 750.
1979 *Parablastothrix,* Krombein *et al.,* Hymen. N. America, 1 : 939.

Male : Generally like *Blastothrix erythrostethus,* but antennae ramose; head rounded; eyes hairy; ocellar triangle obtuse; ocellocular space equal to ocellar diameter; mandible large, tridentate apically; maxillary palpi with 4 and labial palpi with 3 segments; antennae inserted on level of lower orbital border, with scape, pedicel, 6 funicular segments, and entire club; funicular 1-4 segments each with one lateral branch; fifth segment as long as the preceding 3 funicular segments combined; sixth segment pyriform; club short, ovate.

Pronotum short; mesonotum entire; axillae contiguous; scutellum convex, subtriangular, rounded behind; fore wings large; vein *sm* long; *m* almost punctiform; *pm* shorter than *st; st* equal to *m* and *pm* combined; hind tibial spur double.

Abdomen shorter than thorax.

Female Eyes large; pedicel longer than thick; funicular segments short; club triarticulate, stout, tuncate apically.

Type-species *Parablastothrix cerpertinus* Mercet

Parablastothrix Indicus Shafee, Alam & Agarwal

(Fig. 242)

1975 *Parablastothrix indicus,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 104.

Male Length 1.10 mm. Body dark brown, with metallic-blue reflections; eyes red; head dark brown with metallic-bluish reflections; ocelli white; legs dark brown, except tip of femora, bases and apices of tibiae and tarsi white; abdomen yellowish-brown with slight metallic reflections.

Frontovertex about 2 times wider than long; ocellar triangle obtuse-angled; ocellocular space subequal to ocellar diameter; ocelloccipital space less than ocellar diameter; mandible tridentate, middle tooth well developed; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape cylindrical, about 3.50 times longer than thick; pedicel about as long as thick, distinctly longer than first funicular segment; funicular segments 1-4 with branches; first funicular segment distinctly thicker than long, second slightly thicker than long, third segment equal to the first 2 segments combined, fourth segment distinctly longer than the sixth; club 2 times longer than thick; shorter than preceding 2 funicular segments combined.

Fore wings sligbhtly more than 2 times longer than wide; costal cell broad; discal area with transparent setae; vein *m* equal to *pm; st* longer than *pm;* marginal fringe short and spaced by a distance equal to 0.33 of hair.

Type locality : Mysore, Bangalore, Yesvantpur

Host : Greenaspis divergens

Parageniaspis Masi

1917 *Parageniaspis,* Masi, *Novit. Zool.,* 25 : 154.

1921 *Parageniaspis,* Mercet, *Fauna Iberica,* 341.

1970 *Parageniaspis,* Alam, *Mushi,* 43 : 137-142.

1975 *Parageniaspis,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 90.

Male : Body dull or slightly shiny; frontovertex equal to eye; ocellar triangle equilateral; eyes large, sparsely pubescent; mandible tridentate apically; antenna stout, short, inserted on level of lower orbital border, with 11 segments : 1.1.6.3; scape short, slightly expanded in the middle; pedicel nearly as long as thick; funicular segments quadrate; club very stout, thicker than funicle, slightly produced apically.

Thorax entire; axillae separate; scutellum subtriangular; fore wing broad, hyaline, with speculum; marginal fringe short; vein *m*

longer than thick; *st* more or less equal to *m; pm* equal to or slightly shorter than *m;* middle tibial spur equal to metatarsus; hind tibial spur single.

Abdomen shorter than thorax, truncate apically.

Female Antenna much shorter, inserted slightly below the level of orbital border; pedicel slightly longer than first funicular segment, which latter is thinner than the sixth funicular segment; club thicker than funicle; abdomen subtriangular, longer than thorax.

Type-species *Parageniaspis macrocercus* Masi

Parageniaspis indicus Alam

(Fig. 242)

1970 *Parageniaspis indicus,* Alam, *Mushi,* 43 (12) : 137.

1975 *Parageniaspis indicus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 90.

Female : Length 1.50 mm. Frontovertex bluish, clypeolabral and malar areas blackish-blue, with reddish tinge, postocciput black; frontovertex with large scattered punctae; antennae light brown with upper margin of scape and basal 0.50 of pedicel dark brown, apical 0.50 of pedicel and sixth funicular segment white; thorax golden-yellow with greater part of pronotum, anterior 0.50 of mesoscutum and prosternum black, metanotum on sides and propodeum reddish-brown; wings hyaline; legs uniformly yellow, tibiae above dark brown; abdomen brown above yellow below.

Head wider than long; frontovertex as wide as long, lateral ocelli contiguous with eye; ocelloccipital space equal to ocellar diameter; eyes bare, globular; gena shorter than eye; scrobes deep, convergent; toruli below the level of lower orbital border; mandibles tridentate; maxillary palpi with 4 and labial palpi with 3 segments; scape long, slightly compressed, about 4 times longer than thick; pedicel about 2.50 times longer than thick, equal to the following 3 funicular segments combined; funicular segments subequal, slightly thickening distad; club 3-segmented, equal to the preceding 5 segments combined, rounded, apically more than 2 times longer than thick.

Pronotum uniformly wide; front margin deeply and acutely notched in the middle, hind margin convex; axillae broadly contiguous; fore wings 2.50 times longer than wide; costal cell wide; veins *m, st* subequal, vein *pm* longer than *m* and *st* separately; marginal fringe short, spaced by a distance equal to 0.50 of a fringe; hind wings 4 times longer than wide; marginal fringe short, spaced by a distance equal to 0.50 length of a fringe; middle tibial spur much shorter than metatarsus; tip of middle tibiae, metatarsus, tarsal segments 2-4 with 4, 12, 7, 5 and 5 pegs respectively; hind legs with one short tibial spur

Abdomen subtriangular, equal to thorax; ovipositor concealed; subgenital plate of uniform width, with front margin slightly convex in the middle, hind margin with a notch in the middle, mid-longitudinal groove extending over 0.75 width of the plate; outer plates of ovipositor of almost uniform width, anterior margin shortest, with articular concavity, posterior margin with 4 long setae, ventral margin thin and almost straight dorsal marginal ridge extending 0.75 length; first valvifers subtriangular with articular knobs little prominent; second valvifers long and narrow with dorsal margin thickened throughout; third valvulae subconical, movably articulated with the second valvifers.

Type locality : Moradabad

Distribution : Dehra Dun, Patna

Host : Laccifer lacca

The relationship of this species to the type-species is shown below :

Pedicel slightly longer than the following segment; vein *st* shorter than *m*, vein *pm* as long as or shorter than *m;* middle tibial spur equal to metatarsus.	*P. macrocercus* Masi
Pedicel clearly much longer than the following segment; vein *st* subequal to *m;* vein *pm* longer than *m* and *st* separately; middle tibial spur much shorter than metatarsus	*P. indicus* Alam

Parechthrodryinus Girault

1916 *Parechthrodryinus,* Girault, *Proc. US nat. Mus.,* 51 : 480.
1938 *Parechthrodryinus,* Mani, *Cat. Indian Ins.,* 23 : 150.

Girault separates this genus from *Echthrodryinus* Perkins by vein *pm* being 0.50 of *st,* which latter is slightly longer than *m;* vein *m* 2 times as long as thick; frons narrow, 3.50 times diameter of ocellus; ovipositor slightly exserted, white at tip.

Type-species : Parechthrodryinus convexus Girault

Parechthrodryinus clavicornis (Cameron)

(Fig. 243, 244)

1912 *Copidosoma clavicornis,* Cameron, *Indian forest Rec.,* 4 : 101.
1915 *Copidosoma clavicornis,* Cameron, *Mem. Indian Forest,* 3.
1935 *Parechthrodryinus clavicornis,* Ferrière, *Bull. ent. Res.,* 26 : 398.
1938 *Copidosoma clavicornis,* Mani, *Cat. Indian Ins.,* 23 : 88.

Female : Length 1.00-1.60 mm. Body black with metallic reflections; head tinged with bluish-violaceous; mesonotum darker

than scutellum, distinctly brassy; pleurae coloured like mesonotum; abdomen violaceous, distinctly blue-tinted basally; scape yellowish-testaceous, flagellum fuscous; legs yellow to fulvo-testaceous, base of coxae broadly, base of femora and a broad line on the outside of the tibiae nearer base than apex, black; wings hyaline; veins fuscous.

Body shiny, abdomen more than thorax, smooth; scutelum finely and closely punctate, punctae only visible high magnification sides apparently closely, finely, transversely striate; mesonotum closely, scutellum more sparsely covered with long black hairs, with few scattered punctae in front; front ocellar space greater than interocellar space; lateral ocelli almost touch eyes, which slightly longer than gena; scape about 0.67 of flagellum, not reaching much above the bottom of eyes; flagellum stout, thickened apically; pedicel about 3 times longer than thick; other segments of flagellum as thick as long; club with 4 segments, apical 2 smaller than the preceding 2 segments.

Thorax small; scutellum large, triangular, becoming gradually, rather roundly narrowed from base to apex, longer than wide basally; basal bordering furrow shallow, but distinct; antennae and legs covered with short white, close pubescence; vein *m* thickened, longer than thick about 0.33 of *st*.

Abdomen longish-triangle, becoming gradually narrowed from base to apex; shorter than thorax; ovipositor distinctly exserted.

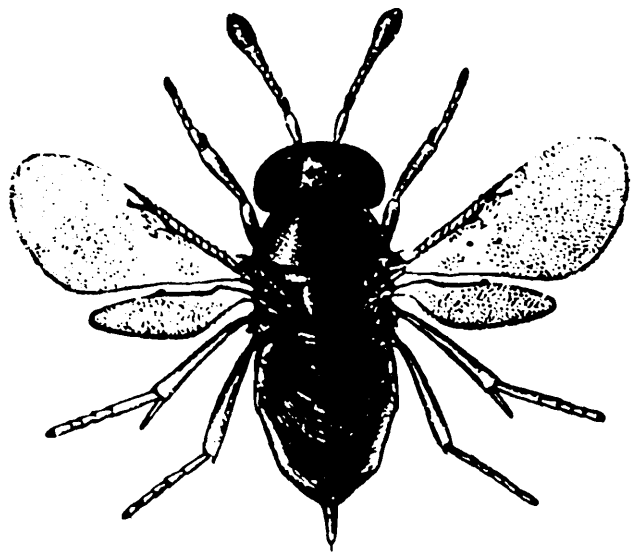

FIG. 243. *Parechthrodryinus Clavicornis* (Cameron), female.

Male Similar to female, from which it differs only by the form of antennae; elongate, with pedicel rounded, first funicular segment about 4 times as long as thick, following segments a little shorter,

but all at least 2 times as long as thick and all covered with long hairs; club narrow, as long as 2 preceding segments combined.

Type locality Bangalore

Distribution Bangalore, Dehra Dun, Punjab, Ranchi

Host Lac-insect

Ferrière (1935) remarks as follows : "To the original description of the species, Cameron added also a generic description as "I am not quite certain if this species is true *Copidosoma*" Imms & Chatterjee (1915) gave a figure of it. Mahdihassan (1925) confirms that it is a parasite of the Coccid and adds that it has been found in different localities but is nowhere common; he says that it is surely not a *Copidosoma.* Later, specimens sent to Dr Gahan were referred by him (in litt.) to the genus *Parechthrodryinus* Girault. This genus was founded by Girault (1916) for a Japanese species, *P. convexus,* Gir., reared from a coccid on twigs of *Deguelia microphylla.* The short description of the genus is as follows : "In my table to the earth's ectromine genera of Encyrtidae runs to *Echthrodryinus,* Perkins, but differs in that the postmarginal vein is half the length of the stigmal, the latter slightly longer the marginal, which is twice longer than wide. The narrow frons is about three and a half times the diameter of the cephalic ocellus. Ovipositor exserted slightly, white at apex." Girault places this genus among the Ectromini; in reality it belongs to the Encyrtini, having three teeth on the mandibles.

Dr Gahan has been able to compare *P. clavicornis* Cam., and *P. convexus* Gir., and sends me the following notes on them "I am satisfied that they belong to the same genus. In fact I would not be surprised if they were the same species. Girault's types have had the heads removed and crushed on a slide, but the antannae and mandibles are intact and they appear to me to be almost exactly like those of *clavicornis.* The wing of *P. convexus* is also very poorly mounted on a slide and seems to show the triangular projection from the submarginal vein, although this appears less distinct than in the wing of *clavicornis.*"

The triangular projection below the submarginal vein is also found in the genus *Protyndarichus,* Mercet (1922) (= *Tyndarichoides* Mercet 1921, *not* Girault 1920). This genus is very closely related to *Parechthrodryinus;* but *Protyndarychus metallicus* Merc. from Spain differs by its very short stigmal and postmarginal veins, the former being shorter than the marginal vein, and by a somewhat smaller antennal club."

Plagiomerus Crawford

1910 *Plagiomerus,* Crawford, *Proc. US nat. Mus.,* 38 : 89.
1924 *Plagiomerus,* Gahan, *Proc. US nat. Mus.,* 65 (4) : 1.

1968 *Plagiomerus,* Trjpitzin, *Trud. Vses. Ent. Obshch.,* 52 : 76.

1975 *Plagiomerus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 101.

1979 *Plagiomerus,* Krombein *et al.,* Hymen. N. America, 1 : 946.

This genus can be separated from related genera by having acutely quadridentate mandibles, 4 segmented funicle, and presence of long scutellar scales; pedicel distinctly longer than the first 2 funicular segments combined; club longer than funicle; vein *m* longer than *pm- st* combined.

Type-species Plagiomerus diaspidis Crawford

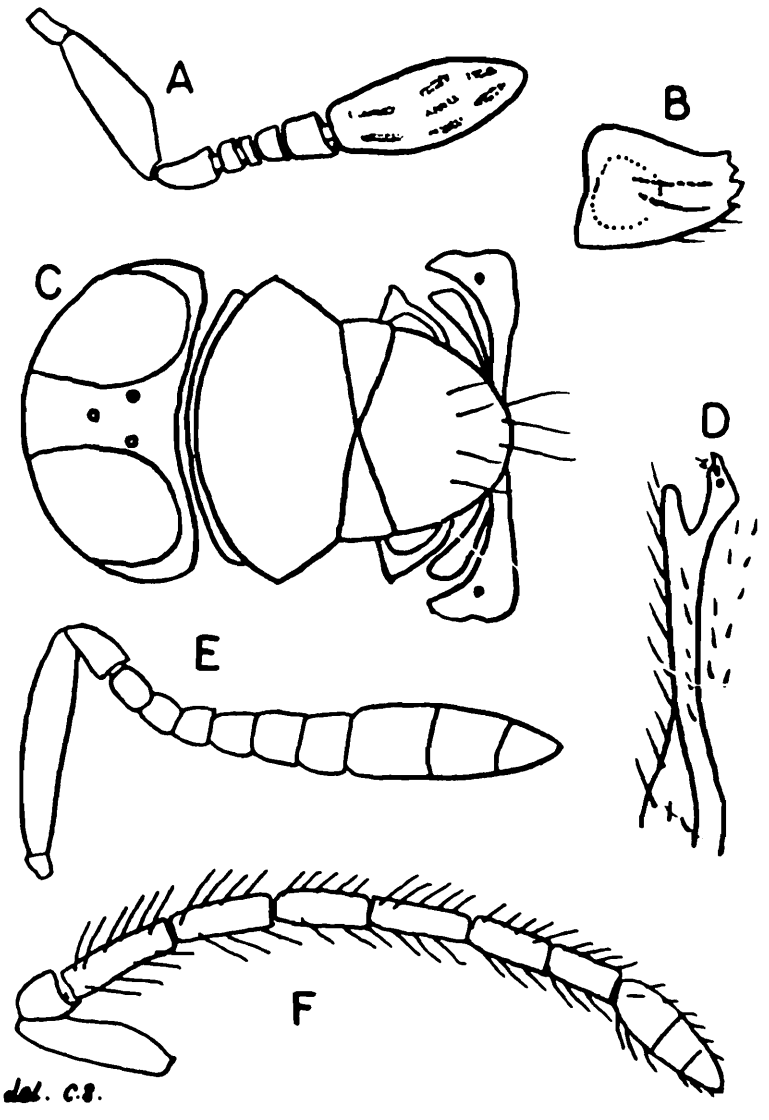

Fig. 244. A-D. *Plagiomerus bangaloriensis* Shafee *et al.,* female : A. Antenna; B. Mandible; C. Head and thorax dorsal view; D. Stigmal venation; E-F. *Parechthrodryinus clavicornis* (Cameron) : E. Antenna, female; F. Antenna, male.

Plagiomerus bangaloriensis Shafee, Alam & Agarwal

(Fig. 244)

1975 *Plagiomerus bangaloriensis,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 102.

Female : Length 0.85 mm. Body dark brown, with intense metallic-blue-green reflections; head dark brown with metallic-bluish-green reflections; antennae dark brown except apex of scape, apical 0.50 of pedicel, funicular and distal 2 club segments yellow; thorax with intensive metallic-bluish-green reflections; pleurites, sternites brown with light metallic reflections; wings hyaline; fore legs dark brown, except trochanters, apex of femora, base and apex of tibiae, and tarsi yellow; middle legs dark brown excet trochanters, basal 0.50 and apex of femora, basal and distal 0.50 of tibiae, and tarsi yellow; abdomen dark brown, with metallic-green reflections; hind legs dark brown except base and apex of femora, base and apex of tibiae, and tarsi yellow.

Head in front wider than long; frontovertex 2.50 times longer than wide; ocellar triangle equilateral, lateral ocelli almost contiguous to eye; ocelloccipital space 2 times ocellar diameter, gena 2 times eye; scrobes horse-shoe-shaped; mandibles with 4 acute teeth; maxillary palpi with 4 segments; scape slightly dilated in the middle, a little more than 3 times longer than thick; pedicel slightly less than 2 times longer than thick, about as long as following 3 funicular segments combined; funicular segments 1-3 distinctly thicker than long; first funicular segment shorter than the third and less than 0.50 of the fourth segemnt; second segment shortest, 2.50 times thicker than long; fourth segment about as long as thick; club 2.50 times longer than thick, longer than pedicel and funicular combined.

Scutum less than 2 times wider than long; axillae contiguous; scutellum as long as scutum, with 4 pairs of very long setae; posterior margin of scutullum rounded; fore wings 2.50 times longer than wide; costal cell broad; vein *sm* with 10 long setae; vein *m* distinctly longer than *pm* and *st* combined; marginal fringe short, spaced by a distance equal to 0.25 of their length; hind wings 4 times longer than wide; marginal fringe short and spaced by a distance about 0.25 of hairs; middle tibial spur slightly longer than metatarsus; 8 pegs at tip of tibia.

Abdomen as long as thorax; ovipositor from base of abdomen; third valvulae movably articulated with second valvifers; ovipositor slightly exserted.

Type locality : Mysore, Bangalore

Host : Peliococcus sp. on *Prosopis spicigera*

The relationship of this species to the other known species of the genus is shown in the following key :

1. Club distinctly longer than pedicel and funicle combined; funicular segments 1-2 thicker than long.	2
Club shorter than pedicel and funicle combined; funicular segments 1, 3, 4, about as long as thick; vein *sm* as long as *st*	*P. diaspidis* Crawford
2. First funicular segment as long as third and more than 0.50 of fourth; fourth funicular segment thicker than long	*P. cyanea* (Ashmead)
First funicular segment shorter than third, about 0.50 of the fourth; fourth funicular segment as long as thick; vein *m* longer than *pm* and *st* combined	*P. bangaloriensis* Shafee *et al.*

Prionomitus Mayr

1875 *Prionomitus,* Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 701.
1875 *Encyrtus* (partim), Thomson, *Skand. Hym.,* 4 : 155.
1904 *Prionomitus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 299.
1909 *Prionomitus,* Schmiedeknecht, *Gen. Ins.,* 97 : 226.
1914 *Prionomitus,* Brèthés, *Ann. Zool. Aplic. Chile,* 1 : 29.
1919 *Prionomitus,* Masi, *Ann. Genova Mus. Civ. Stor. Nat.,* 3,8 (48) : 154.
1921 *Prionomitus,* Mercet, *Fauna Iberica,* 225.
1926 *Prionomitus,* Mercet, *Eos,* 2 (4) : 313.
1961 *Prionomitus,* Ferrière, *Entamophaga,* 6 (1) : 41-42.
1963 *Prionomitus,* Erdös, *Beitr. Ent.,* 13 (3-4) : 285.
1963 *Prionomitus,* Hoffer, *Acta Ent. Mus. Nat. Pragae,* 35 : 553.
1969 *Prionomitus,* Graham, *Polskie Pismo Ent.,* 39 (2) : 245.
1979 *Prionomitus,* Krombein *et al.,* Hymen. N. America, 1 : 959.

Female : Body metallic-green; frontovertex shagreened, partly with a row of coarse punctae; maxillary palpi with 4 and labial palpi with 3 segments; antennae inserted on lower orbital border, without pale annellus; pedicel longer than first funicular segment, funicular segments short, except the first; others not longer than thick; mandible rather long, acutely pointed; mesonotum and scutellum shagreened; fore wing hyaline; vein *m* very short; abdomen compressed.

Male : Like female, except as follows : Pedicel not longer than thick, about 1.50 times first funicular segment; funicular segment somewhat compressed, with erect verticillate setae; first funicular segment 2 times longer than thick; club equal to sixth funicular segment, rounded apically; scutellum shiny; vein *m* almost absent; *st* long, somewhat shorter than *pm.*

Type-species : Prionomitus mitratus (Dalman).

Prionomitus kamathi Mani & Saraswat

(Fig. 245)

1974 *Prionotimus kamathi,* Mani & Saraswat, *Mem. School Ent.,* 3 : 84.

Female Length 2.10 mm. Body blackish-brown, with faint metallic sheen on mesonotum, scutellum and sides of abdomen; head dark metallic-blue, antenna non-metallic, blackish-brown, scape and pedicel darker; legs blackish-brown, coxae, trochanters, femora, 0.50 of fore and middle tibiae, whole of hind tibiae and last tarsal segment of all legs concolorous with body; otherwise legs brown to dark brown; wings hyaline, veins dark brown.

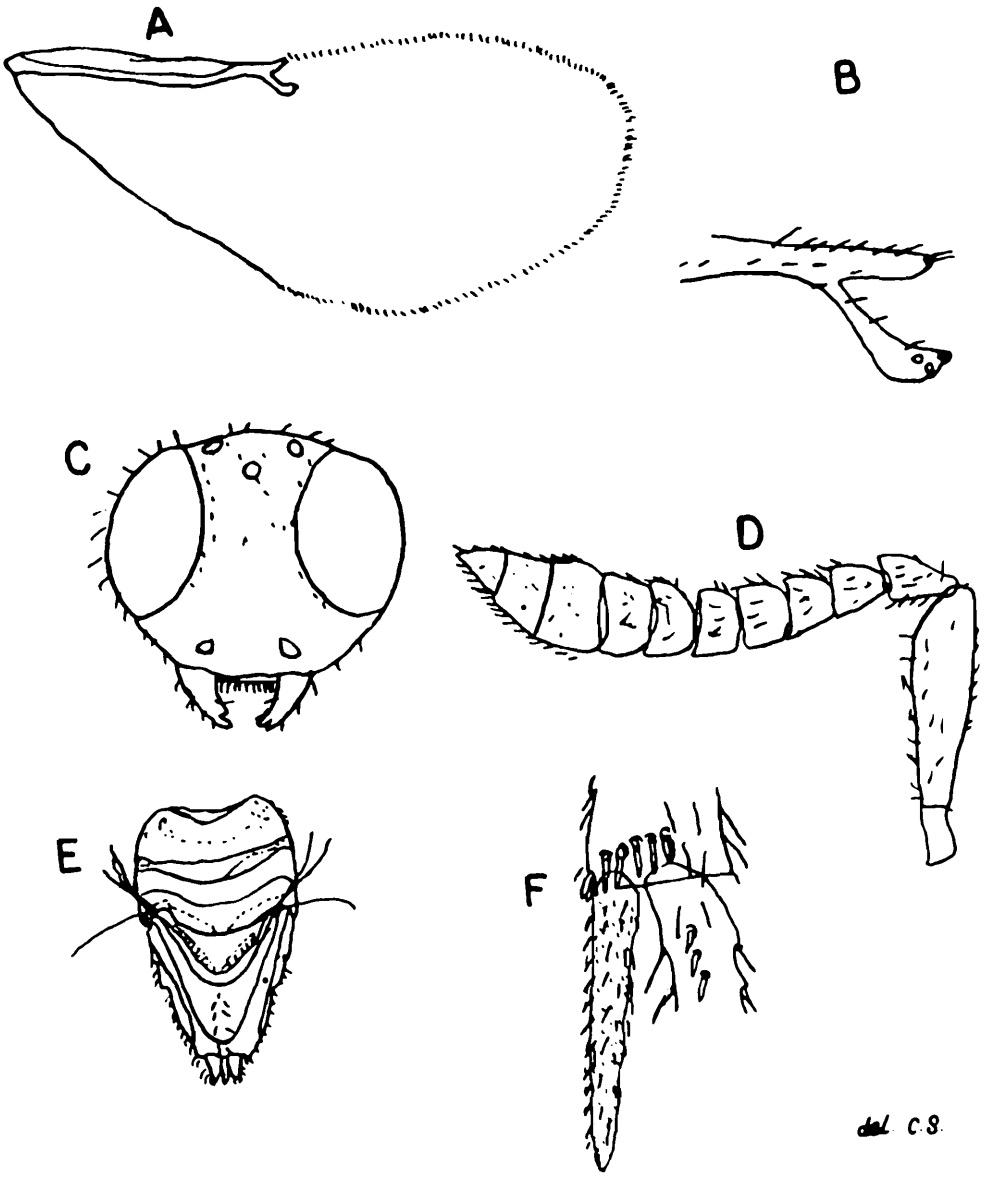

Fig. 245. *Prionomitus kamathi* Mani & Saraswat, female : A. Fore wing; B. Stigmal venation; C. Head in front view; D. Antenna; E. Abdomen; F. Middle tibial spur.

Head in front length to width 82 : 100, finely reticulate, with deep punctae on vertex and frons; separated by a distance of 1.50-2.00 their own diameter on vertex, but more widely separated on frons, comparatively smaller but deep punctae about 8 in a row along the inner orbital border and separated by a distance of about 1.50-2.00 their own diameter; clypeus truncate; ocellocular space about 0.50 of ocellar diameter, front ocellar space about 1.50 times ocellar diameter, interocellar space equal to 3 ocellar diameters; eyes pubescent, mandibles tridentate, middle tooth longest; labrum with a pair of long setae all along the anterior border; antennal segments 11 : 1.1.6.3; scape expanded apically, slender basally, with fine reticulate microsculpture, 3.30 times longer than wide; radicle about 0.25 of scape; pedicel 1.80 times longer than thick, about 0.40 of scape; first funicular segment as long as thick, length to width ratio of segments 2-6 : 12 : 14, 12 : 16, 12 : 17, 12 : 18, 14 : 19; about equal to 3.25 times preceding funicular segments combined, stout, obliquely truncate below, slightly thicker than funicle, very slightly more than 2 times as long as thick, first segment 1.46 times thicker than long, second 1.66 times thicker than long, third subconical, only very slightly longer than thick.

Thorax shagreened, mesonotum with shallow, scattered punctae, scutellum and propodeum with very fine, obscure, distinct, longitudinally striolate microsculpture; axillae contiguous; parapsidal furrows absent; fore wing length : width 100 : 43, marginal fringe very short, speculum incomplete, veins *sm, m* and *pm* with 6 long long and 6 short, 3 short and 2 short setae respectively; *m* punctiform, *st* long; veins *sm : m : pm : st* ratio 757 : 100 : 71 : 114; hind to fore wing length 73 : 100; fore coxa 1.87 times as long as thick, with fine reticulate microsculpture, with 4 long, 3 short setae above and several basally; femur 4 times as long as thick; 1.66 times coxa, with fine reticulate microsculpture; tibia to femur 4 : 5, about 4 times longer than wide, attenuated basally; tarsus almost equal to tibia, metatarsus 0.25 of tibia or tarsus, with 12 stout spines below, second segment about 0.75 of metatarsus, third only very slightly shorter than the second, fourth subequal to the third, fifth subequal to metatarsus; middle coxa 1.80 times as long as wide, with fine reticulate microsculpture and with 6 long setae below and 3 above; femur about 6 times longer than wide, about 2.30 times coxa, with fine reticulate microsculpture; tibia a little longer than femur, wider apically, attenuated basally, a little more than 6 times longer than wide, spur very long, stout, about 0.33 of tibia, about 0.50 of tarsus and about 7 times longer than thick; tarsus about 0.66 of tibia, metatarsus about 0.20 of tibia and slightly less than 0.33 of tarsus, with 6 stout spines below, second segment about 0.66 of metatarsus, third only very slightly shorter than the second and slightly more than 0.50 of metatarsus, fourth very slightly more than 0.50 of metatarsus, fourth very slightly more than 0.75 of the third, fifth 0.75 of metatarsus; hind coxa as long as thick, with fine reticulate

microsculpture; femur about 3.30 times longer than thick, about 2 times coxa, with fine reticulate microsculpture; tibia about equal to mid femur, about 5.50 times longer than thick, about 1 15 times femur, spur about 0.16 of tibia and only slightly less than metatarsus; tarsus very slightly shorter than middle tarsus, about 0.68 of tibia, metatarsus 0.17 of tibia, about 0.25 of tarsus, with 10 stout spines below, second segment 0.90 of metatarsus, third 0.75 of metatarsus, fourth subequal to the third, fifth subequal to the second.

Type locality Dalhousie

Encyrtus (Latreille) Dalman

1809 *Encyrtus* (?) Latreille, *Gen. Crust. Inst.*, 4 : 31.
1820 *Encyrtus,* Dalman, *Svensk. Vet.-Akad. Handl.*, 41 : 147.
1856 *Eucomys,* Förster, *Hym. Stud.*, 2 : 32, 34.
1856 *Comys,* Förster, *Hym. Stud.*, 2 : 144
1875 *Microterys,* (Partim), Thomson, *Hym. Skand.*, 4 : 155.
1897 *Howardia,* Dalla Torre, *Wien. Ent. Ztg.*, 16 : 86.
1898 *Howardiella,* Dalla Torre, *Cat. Hym.*, 5 : 228.
1904 *Encyrtus,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 297.
1909 *Encyrtus,* Schmiedeknecht, *Gen. Ins.*, 97 : 241.
1916 *Allorhopoideus,* Bréthès, *Ann. Mus. Argentina Cient. Nat.*, 27 : 425.
1919 *Encyrtus,* Silvestri, *Boll. Lab. Zool. Portici,* 8 : 151.
1921 *Prorhopoideus,* Brèthés, *Bul. Soc. ent. France,* 80.
1938 *Encyrtus,* Mani, *Cat. Indian Ins.*, 23 : 90.
1952 *Eucomys,* Risbec, *Mem. Inst. Sci. Madagascar,* 2 : 6.
1952 *Encyrtus,* Risbec, *Mem. Inst. Sci. Madagascar,* 2 : 43.
1963 *Encyrtus,* De Santis, *Ann. Comm. Invest. Cient. Buenos, Aires,* 4 : 314.
1969 *Encyrtus,* Graham, *Polskie Pismo Ent.*, 39 (2) : 305.
1979 *Encyrtus,* Krombein *et al.*, Hymen. N. America, 1 : 941.

Head and thorax not metallic-coloured; front not projecting, mostly with a row of large punctae near eyes; eyes small, glabrous; ocellar triangle obtuse; labrum not visible; mandible tridentate; antennae inserted not far from mouth border, rather stout, short; scape more or less foliaceously expanded below; club apically rounded or shortly truncate; mesonotum transversely arched, shagreened, more or less shiny; scutellum mostly with a different sculpture; wings always present, mostly with spots, but not readily disposed, forming only bands; vein *m* distinctly shorter than *st;* abdomen short; ovipositor not or only very little exserted; funicle in male setaceous, uniformly thick, without semiverticillate setae; body metallic-coloured; eyes minute.

Type-species *Encyrtus infidus* (Rossi)

Encyrtus albidus Hayat

1970 *Encyrtus albidus,* Hayat, *Mushi,* 44 (8) : 61.

Female : Length 1.84 mm. Frontovertex yellow, face and malar space white, a longitudinal band above foramen on occiput brown; hairs white; scape except dorsal margin whitish, pedicel, funicle and first club segment yellowish-white, scape above and distal 2 club segment brown; thorax above orange-yellow, sides and venter pallid; pronotum with a brown patch in the middle, metanotum dusky laterally; scutellar brush black; legs white, hind tibial spur dusky; abdomen yellow.

Frontovertex finely reticulate, with a few fine punctae, ocellar triangle obtuse; gena shorter than eye; in front head 0.25 times wider than long; scrobes deep, frontal ledge well developed; antennal sockets 1.50 times their own diameter from facial margin, 2 sockets spaced by a distance more than 2 diameters of a socket; mandibles spatulate, apex acute convex; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape over 4.50 times longer than thick; pedicel slightly shorter than first funicular segment; first 3 funicular segments longer than thick, fourth subquadrate, fifth and sixth thicker than long; club slightly longer than preceding 2 funicular segments combined.

Pronotum reticulate, anterior margin with a wide notch in the middle, hind margin bearing a row of 18 setae; mesoscutum with faint longitudinal reticulations; scutellum reticulate; mesopostphragma rounded apically; fore wings faintly infumate, dusky, over 2 times as long as wide; vein *m : pm : st* ratio 512 : 150 : 176; hind wing hyaline, costal cell broad, marginal fringe short; middle metatarsus slightly shorter than tibial spur, tip of tibia and 1-4 tarsal segments bearing 11, 12, 4, 4 and 4 pegs respectively.

Abdomen slightly dusky, much shorter than thorax, suboval, rounded apically; subgenital plate wide, anterior margin concave, posterior margin broadly notched in the middle; second valvifers curved; outer plates of ovipositor widened distally, with a sub-marginal ridge; first valvifers shaped like an acute triangle, articular knobs prominent.

Male : Length 1.30 mm. Differs from female as follows : orange-yellow. except a large patch on pronotum, metanotum on sides, abdomen with a large patch in the middle black; hind femora above at distal 0.50 tibiae largely above and tarsi brown; scape 3.50 times longer than thick; pedicel slightly longer than thick; funicular segments longer than thick, first segment shortest; club entire, shorter than preceding 2 funicular segments combined.

Type locality : India : Goa, Sanguem.

Encyrtus ceroplastis Agarwal

(Fig. 246)

1965 *Encyrtus ceroplastis,* Agarwal, *Acta. Hym.*, 2 (2) : 58.

Female Length 2.29 mm. Frontovertex black along the base of ocellar triangle; cheeks yellow with a dark brown streak from the ocellar rim to end on the width of cheeks; eyes reddish-brown; postocciput reddish-yellow; ocelli red; mandibles yellow at base, brown at tip with only one spatulate tooth; maxillae brown excepting apical lobes whitish; scape with a dark brown band above, whitish, pedicel and funicular segments 1-5 dark brown above and light brown below; sixth segment and club dark brown; thorax brownish-black in the middle, yellow at sides and behind; mesoscutum with a black band along front margin; axillae reddish-yellow, black along posterior margin wings hyaline; fore coxae whitish-yellow, trochanters and femora most part whitish; a reddish-brown band above on femora; tibiae and tarsi reddish-brown; middle legs whitish-yellow with some dark brown patches; hind coxae whitish, except at base and apex trochanters, femora tibiae and basal 0.50 of metatarsus dark brown, remaining tarsal segments whitish; abdomen blackish-brown; subgenital plate brownish.

Head wider than long, occipital margin acute; frontovertex about 3 times wider than long, without punctae; ocellar triangle acute-angled; ocelloccipital space less than ocellocular space; eyes large, occupying nearly 0.75 of head depth; bare; gena short, shorter than eye; maxillary palpi with 4 segments, last segment very long; labial palpi with 3 segments, second segment a short annellus; antennae long, slightly compressed, more so towards apex; scape long, slightly expanded apically, about 5 times as long as thick, much shorter than first 3 funicular segments combined; pedicel short, about 2.50 times longer than thick; first funicular segment 2.50 times longer than thick; second segment 2 times, third segment 1.50 times longer than thick respectively; fourth almost as long as thick, fifth and sixth segments thicker than long; club 3 segmented, 1.25 times longer than thick, as long as preceding 2 funicular segments combined, broadly rounded apically; first funicle to last club segments with 2, 2, 4, 6, 10, 10, 14, 14 and 6 sensoria respectively.

Pronotum reticulate; front margin almost straight, with a wide notch; hind margin curved, with 14-19 setae; mesoscutum a very thin streak at sides, smoky on hind margin; apex of scutellum raised, with a cluster of thick brush-like setae; propodeum almost of uniform width; mesopostphragma broadly truncated at apex; fore wing 2.50 times longer than wide, infuscated except near base, a hyaline vertical streak mesad to vein *pm,* another horizontal streak in the middle of disc; vein *sm* very long, vein *m* short, punctiform; veins *pm* and *st* subequal; marginal fringe short, about 0.14 of wing width, spaced

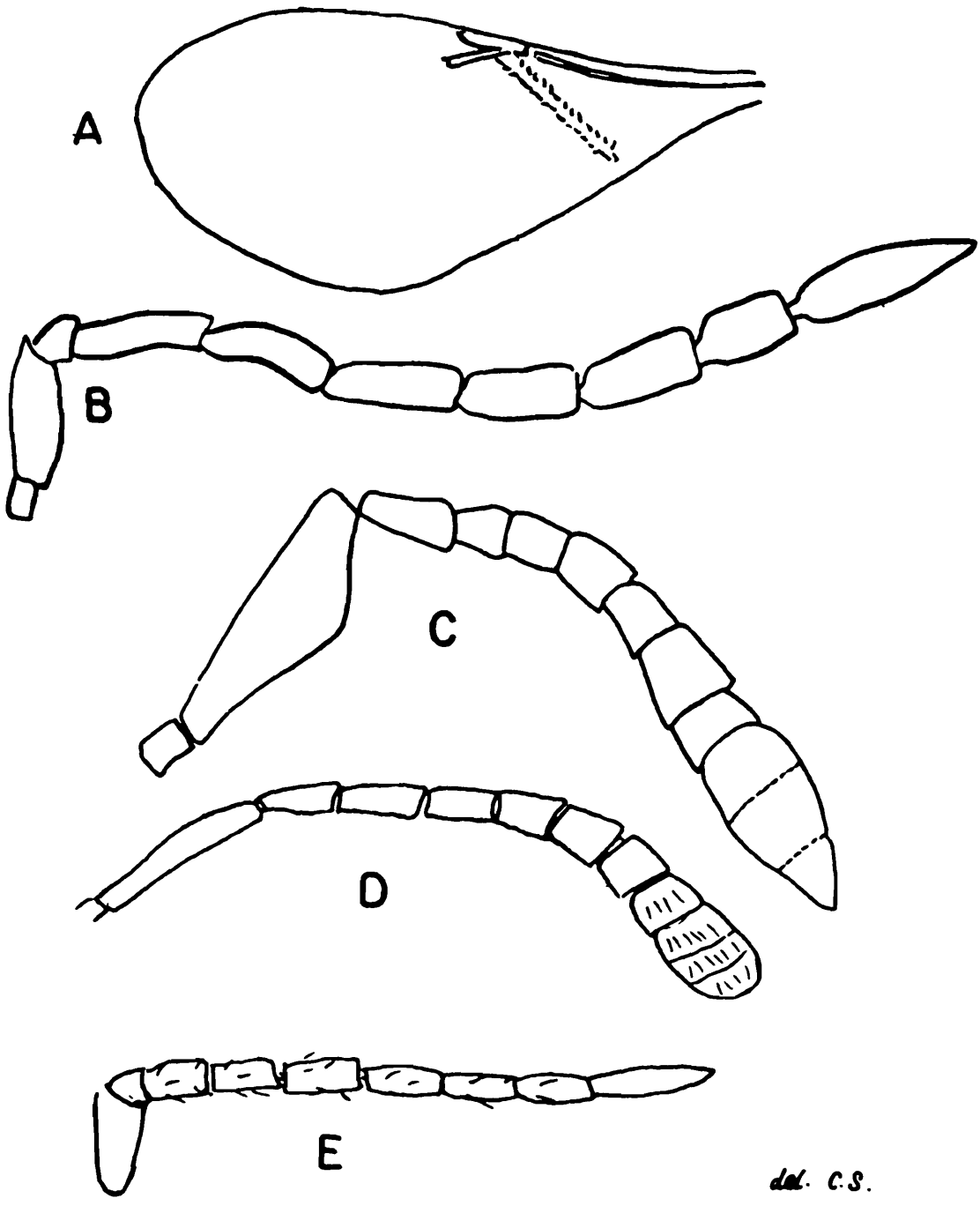

FIG. 246. A-C. *Encyrtus siddiqii* Bhatnagar : A. Fore wing, female; B. Antennae, male; C. Antenna, female; D-E. *Encyrtus ceroplastis* Agarwal : D. Antenna, female; E. Antenna, male.

by a distance equal to 0.25 of length of a fringe; fore coxa with a single stout seta near apex; metatarsus equal to following 2 tarsal segments combined; middle coxa inside and apically, femora above, tip and base of tibiae; coxae with a row of 6 setae on their distal end towards postaxial side; tibial spur equal to metatarsus; metatarsus, tarsal segments 2-4 with 13, 8, 6 and 4 pegs respectively; apex of hind tibiae with 2 unequal spurs.

Abdomen suboval, metallic dorsally; shorter than thorax, rounded at apex; ovipositor concealed; cercal plates start at basal

0.33 of distance; subgenital broad, anterior margin concave, posterior margin narrow with a wide notch in the middle; outer plates of ovipositor narrow basally, expanded apically, with thin dorsal margin; first valvifers subtriangular with prominent articular knobs; second valvifers short and narrow; third valvulae short, immovably articulated with second valvifers.

Male Length 1.54 mm. Like female except as follows : Frontovertex 5 times wider than long; antennae filiform; uniformly light brown, with whitish here and there; scape a little less than 3 times longer than thick; pedicel short; funicular segments elongate; club entire, about 4 times longer than thick; fore wings hyaline, 3 times longer than wide; vein *m* distinct, vein *pm* longer than *st;* abdomen about as long as thorax; cercal plates start about the middle of abdomen.

Tyype locality Aligarh

Host : Lecanium viride Green

Encyrtus lecaniorum (Mayr)

(Fig. 247)

1875 *Comys lecaniorum,* Mayr, *Verh. Zool.-bot. Ges. Wien,* 25 : 740.
1909 *Eucomys lecaniorum,* Schmiedeknecht, *Gen. Ins.,* 97 : 193.
1919 *Eucomys lecaniorum,* Gahan, *Proc. US nat. Mus.,* 56 : 522.
1938 *Eucomys lecaniorum,* Mani, *Cat. Indian Ins.,* 23 : 85
1940 *Eucomys lecaniorum,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 13.
1957 *Encyrtus lecaniorum,* Trjpitzin, *Ent. Obozr. USSR.,* 36 : 699
1963 *Encyrtus lecaniorum,* De Santis, *Ann. Com. Invest. Cient. Buenos Aires,* 4 : 320.
1968 *Encyrtus lecaniorum,* Trjpitzin, *Trud. Vses. ent. Obsh.,* 52 : 70.
1975 *Encyrtus lecaniorum,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.,* (Zool.) 9 : 94.

Female : Length 2.00 mm. Body orange-ferruginous, nigrescent on frontovertex, mesonotum behind and scutellum in front, tip of axillae darker; eyes, front margin of abdomen black, with metallic reflections; scape except above the tip, fore and hind coxae, fore and middle femora, tip of metatarsus and the remaining hind tarsal segments pale yellow, with black line; tip of middle tibia and tibial spur yellow; middle coxae, hind femora, fore and hind tibiae, hind tibial spurs, fore tarsi and hind metatarsus black; pedicel except tip and flagellum dark brown; fore wing infumate; frontovertex with setigerous punctae, transversely reticulate; frontovertex, face, mesonotum behind, scutellum at base, tip of axillae and tip of abdomen with white hairs.

Head as wide as long; antennal segmental ratio 399 : 136 : 144 : 126 : 122 : 100 : 92 : 84 : 74 : 60 : 64; scutum length to

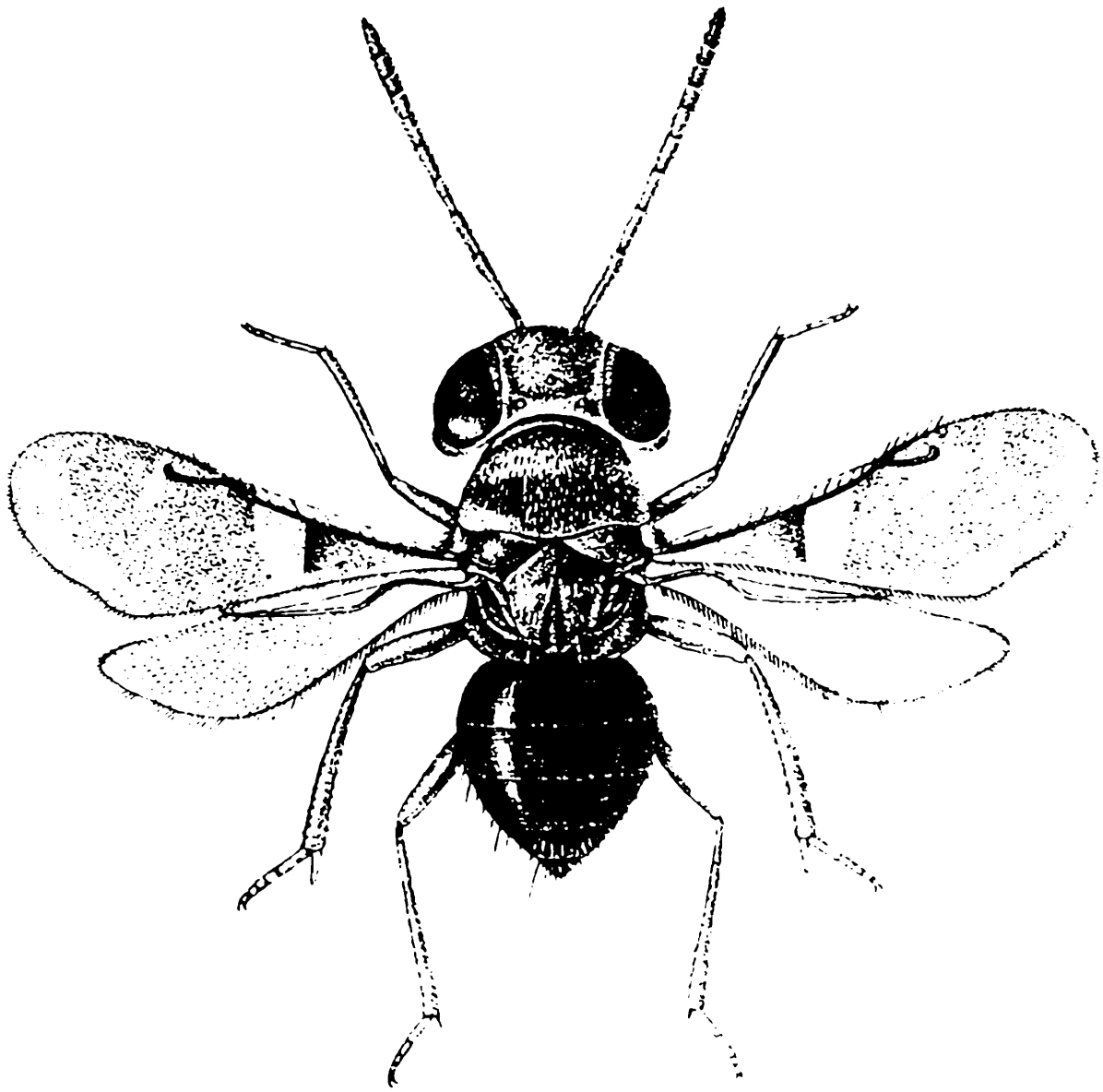

FIG. 247. *Encyrtus lecaniorum* (Mayr).

width 9 : 20; fore wing length to width ratio 1510 607; veins *sm m pm st* ratio 45 : 4 : 15 : 16; abdomen shorter than rhorax; ovipositor not exserted.

Male Length 1 78 mm. Body yellow, eyes black, scape with oblique longitudinal band; fore and hind legs pale yellow, with black lines on fore and hind femora; wings hyaline; head less convex than in female; antennal segmental ratio 210 : 78 : 17 : 135 : 152 161 161 138 : 249; *pm* 2 times *st*.

Type locality Europe

Distribution India : Pondicherry, Nagore, Dindigal, Aligarh, Hissar, Calicut, Coimbatore; S. America; Europe.

Host *Chloropulvinaria psidii* on various plants. *Lecanium nigrum, Coccus hesperidum.*

Encyrtus litchensiae Howard

1895 *Encyrtus litchensiae,* Howard, *Proc. US nat. Mus.,* 18 (1092) : 636.

Female : Length 3.30 mm. Body generally metallic- blue-green; mesonotum with a coppery sheen; pronotum, head and legs dark honey-yellow; mesopleura brown; scape and club black; scape somewhat brown at tip; pedicel and funicular segments 1-4 infuscated, segments 5-6 white; fore wings almost wholly infuscated, but paler at base and tip.

Scape strongly widened below; pedicel somewhat longer than first funicular segment; first funicular segment about 1.50 times longer than thick; remaining funicular segments subequal, but becoming gradually thicker; club flattened, equal to preceding 2 segments combined; obliquely broader, somewhat truncate and attenuate apically; head from side triangular, with eyes prominent, bare; ocellar triangle acute-angled; mesonotum with sparse fine punctae, finely delicately shagreened, but shiny; scutellum more coarsely shagreened than mesonotum, but without punctae and with a row of setae apically, not forming a tuft; vein *m* short; vein *st* and *pm* long.

Type locality : Ceylon : Punduloya.

Host : Litchensia koebeli.

Encyrtus siddiqii Bhatnagar

(Fig. 246)

1951 *Encyrtus siddiqii.* Bhatnagar, *Indian J. Agr. Sci.,* 21 (2) : 167.

Female : Length 1.20 mm. Body generally black; scape submetallic, pedicel, except the last grey segment rest of funicle and the club brown; tegulae hyaline, towards the apex reddish-brown; wings hyaline, veins light brown; extreme base and extreme apex of tibiae grey, tibiae sub-basally black, subapically brown, in the middle pale brown.

Head as wide as thorax; viewed from above, vertex closely and strongly punctate; ocelli in a triangle; more than 2 times as broad as long; interocular space less than 0.50 of head width; ocelli much closer to eyes than to each other, interocellar space greater than ocellocular space; front ocellar space 0.75 of interocellar; occiput deeply concave; viewed in front circular; as strongly and closely punctate as vertex; eyes circular; interorbital space less above than below; antennae inserted far below the middle of face; distance between antennal sockets equal to inner orbital length; antennae with 11 segments : 1.1.6.3; scape 3 times as long as thick; swollen in the middle, about 3 times as long as the pedicel; pedicel short 0.50

times as long as the club, 2 times the first funicular segment; funicle 6 segmented, segments tend to increase in size towards apex; fifth or the last but one funicular segment slightly longer than last; first funicular segment 0.67 of last and 0.25 of club; club 3 segmented, 0.67 of scape.

Thorax with pronotum very narrow, closely and shallowly punctate; mesonotum without parapsidal furrows; punctate as pronotum; axillae narrow, triangular and not meeting in the middle; scutellum as long as mesonotum, closely and shallowly punctate, slightly convex; mesopleurae matt without femoral impression; wings more than 2 times as long as borad; submarginal distinctly broken distad, slender, with a few long discal ciliation; marginal fringe normal; vein *m* very short and about 0.50 of *st; st* slightly shorter than *pm; st* about 4 times as long as broad apically; a hairless line from the base of *st* to the lower margin of wing present; extreme apex of hind femur; mid tibial spur single, thick and 0.83 of metatarsus; hind tibial spur unequal, shorter 0.25 and longer 0.50 of metatarsus.

Abdomen conic-ovate; shorter than thorax; abdominal tergites smooth and dull; ovipositor concealed.

Male : Length 1.90 mm; antennae with only 9 segments; funicle 6 and club one; light yellowish-brown with dense ciliation; scape 3 times as long as thick, equal to the first funicular segment; pedicel short, as long as thick, 0.33 of scape; first funicular segment 0.75 of club and 1.50 times the last funicular segment; club entire, 2 times the last funicular segment; head viewed in front bluish-green; circular; interorbital space less above than below; antennae inserted below the middle of face;face in the middle reticulately shagreened, gena and the lower margin of face brown, regulosely, closely strongly punctate; antennal sockets nearer to eyes than to each other and combined with a median groove; innerorbital border straight; gena 0.33 of innerorbital length.

Host Parasitic on *Eulecanium coryli* Linn.

This species has a superficial resemblance to *Encyrtus tessellatus* Dalman, but is readily distinguished from it by a single hairless line of the fore wing, differently coloured head, antennae and hind legs in male and female.

Species Incertae Sedis

Encyrtus adustipennis Motschulsky

1863 *Encyrtus adustipennis,* Motschulsky, *Bull. Soc. Imp, Nat. Moscou,* 36 (3) : 55.
1909 *Encyrtus adustipennis,* Schmiedeknecht, *Gen. Ins.,* 97 : 242.
1938 *Encyrtus adustipennis,* Mani, *Cat. Indian Ins.,* 23 : 90.
1940 *Encyrtus adustipennis,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 15.

Female : Length 1.25 mm. "Subelongatus, subconvexus, antice opacus, subcinereo pruinosus, postice submetallico nitidus cyanescente-niger; antennarum articulis mediis pedibusque albidis, geniculis tarsique apice nigris; capitis, thoracis abdominsque forms ut in priori, sed minus nitidus et obscuris, abdominis margine coeruleo-metallico; alis subhyalinis, stigma elongato, fascia subpostica maculaque magna versus apicem nigrofuscis."

Type locality Ceylon : Colombo.

Host : Lecanium coffeae

Encyrtus barbatus Timberlake

1919 *Encyrtus barbatus,* Timberlake, *Proc. Hawaii. ent. Soc.,* 6 : 209.
1938 *Encyrtus barbatus,* Mani, *Cat. Indian Ins.,* 23 : 90.
1940 *Encyrtus barbatus,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 15.

I have not seen this species and the original description is not also available to me.

Type locality : India

Distribution : India : Coimbatore

Host : Lecanium nigrum

Encyrtus chionaspidis Howard

1895 *Encyrtus chionaspidis,* Howard, *Proc. US nat. Mus.,* 18 : 637.

Female : "Length 1.20 mm., expanse 2.00 mm. Antennae inserted near mouth, scape slender, pedicel as long as three succeeding funicle segments together; funicle 1-4 subequal in length but increasing in width; segment fifth 2 times as fourth, sixth longer than fifth, about as wide. Club swollen at base, pointed at tip, nearly as long as entire funicle. Head with protruding front, eyes well separated, ocelli forming an obtuse-angled triangle; thorax flat, the wide axillae meeting at tips; ovipositor slightly protruding. General surface glistening, punctation almost imperceptible. Abdoimen as long as thorax, subovate, acute at tip; *m, pm* and *st* veins subequal. General colour black, with metallic reflections, antennae brown, all legs except coxae pallid; wings hyaline."

Type locality Ceylon : Punduloya

Host : Chionaspis graminis Ernst

Encyrtus corvinus Motschulsky

1863 *Encyrtus corvinus,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 55.
1909 *Encyrtus corvinus,* Schmiedeknecht, *Gen. Ins.,* 97 : 243.
1938 *Encyrtus corvinus,* Mani, *Cat. Indian Ins.,* 23 : 90.

Length 1.25 mm. "Subelongatus, subconvexus, antice subopacus, postice nitidus, niger, pedibus rufotestaceis, femoribus tarsique plus minusve infuscatis; capite subrotundato, subtilissime punctulato, fronte subconvexo, notido oculis magnis, vix convexis, cinereis, antennis nigris, thoracis latitudine, gracilis, clavatis, 11 articulatis scapo antennis dimidio, paulo breviori, basi angustissime albo; thorace capite paulo angustiore, subtilissime punctulato, postice attenuato, pronoto convexo subopaco, mesonoto subrotundato, medio nitido; abdomine ovato, convexo, nitidissimo."

Type locality Ceylon : Summit of Mt. Patannas

Encyrtus flavus Howard

(Fig. 248)

1880 *Encyrtus flavus,* Howard, *Annual Rep. US Dep. Agric.,* 367.
1896 *Encyrtus flavus,* Howard, *Proc. US nat. Mus.,* 18 : 636.
1938 *Encyrtus flavus,* Mani, *Cat. Indian Ins.,* 23 : 91.
1940 *Encyrtus flavus,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 16.

Distribution : Ceylon, Coimbatore

Host *Lecanium* and *Pulvinaria* sp.

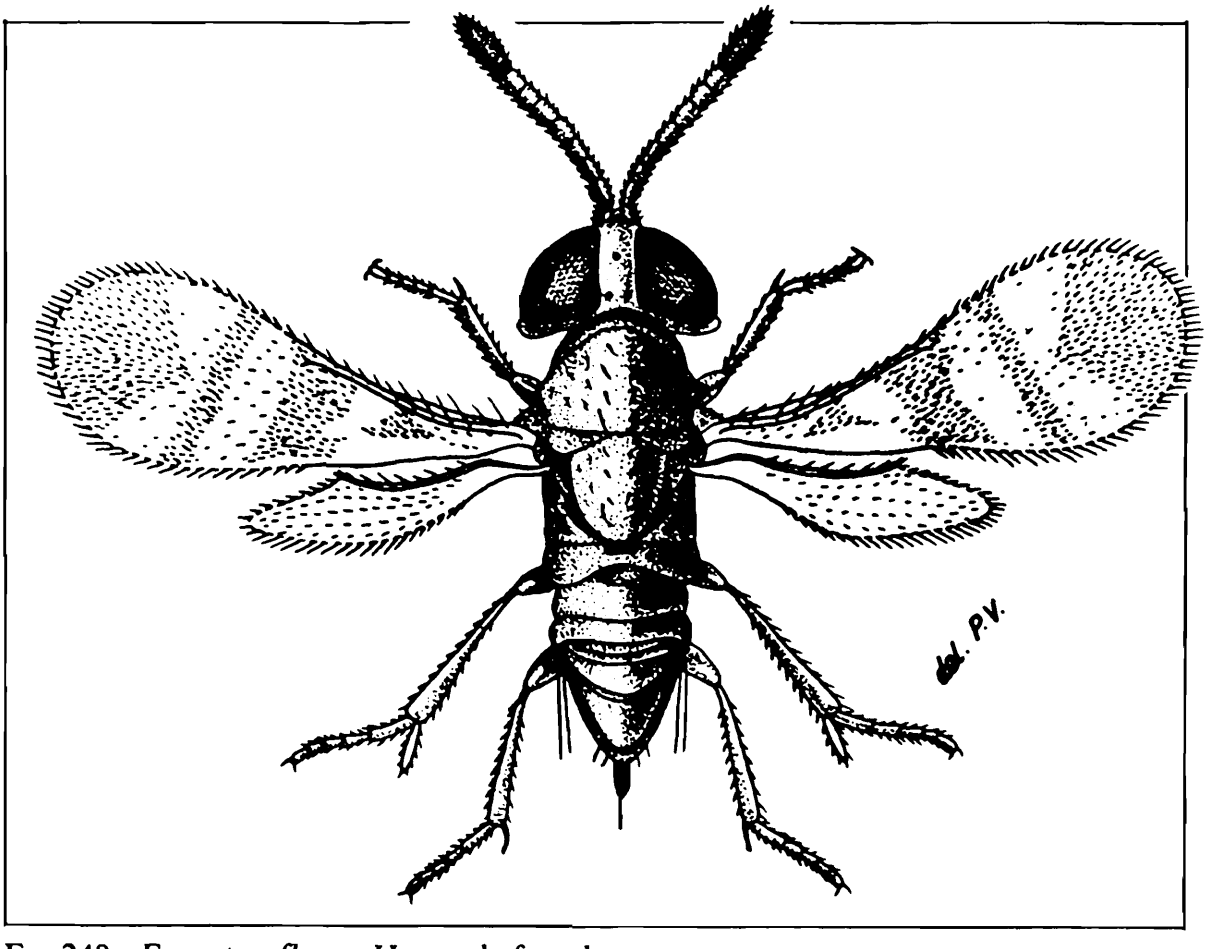

FIG. 248. *Encyrtus flavus* Howard, female.

Encyrtus kotinskyi (Fullaway)

1913 *Apentelicus kotinskyi,* Fullaway, *Annual Rep. Hawaii Agric. Expt. Sta.,* 26.
1919 *Microterys kotinskyi,* Timberlake, *Proc. Hawaii, Ent. Soc.,* 4 : 184.
1938 *Microterys kotinskyi,* Mani, *Cat. Indian Ins.,* 23 : 91.

Type locality : Coimbatore
Distribution : Coimbatore
Host : Lecanium nigrum

Encyrtus nietneri Motschulsky

1859 *Encyrtus nietneri,* Motschulsky, *Etud. Ent.,* 170.
1863 *Encyrtus* (?) *nietneri,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 54.
1909 *Encyrtus nietneri,* Schmiedeknecht, *Gen. Ins.,* 97 : 245.
1938 *Encyrtus nietneri,* Mani, *Cat. Indian Ins.,* 23 : 91.

Length 1.80 mm. "Elongato-attenuatos, subconicus, nitidus, rufo-testaceus, pedibus pallidioribus, alba pubescentibus, tarsis albidis, unguiculis nigris, antennarum articulis 4 et 5 infuscatis, 6-8 albidis, 9-11 nigerrimis, oculis coerulescente-cinereis, alarum macula lata antice, fascia angusta medio apiceque fuscis, subnigro maculatis; capite subrotundato, antice convexo, postice lato concavo truncato, ocellis minutis, subnigris, trinaguliter postis, oculis magnis, vix convexis, subrotundatis, postice paulo angustim prolongatis, approximatis, antennis thoracis longitudine, solidis, clavatis, apice truncatis; thorace capitis latitudine, subconvexo, postice leviter attenuato, pronoto subtransverso, antice arcuato, capite solido applicato, postice transverseim trucato, segmentis transversis, subconvexis, mesonoto pentagono-subrotundato, metanoto vix distincto; abdomine sessile, thorace paulo angustiori, elongato-conico, subconvexo, apice subaculeato; tarsis 5 articlatis."

Type locality : Ceylon : Mt. Nuwara Elliya
Distribution : Ceylon
Host : Pseudococcus coffeae

Encyrtus obstructus Walker

1860 *Encyrtus obstructus,* Walker, *Ann. Mag. Nat. Hist.,* 6 : 359.
1863 *Encyrtus obstructus,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 55.
1909 *Encyrtus obstructus,* Schmiedeknecht, *Gen. Ins.,* 97 : 245.
1938 *Encyrtus obstructus,* Mani, *Cat. Indian Ins.,* 23 : 91.

"Male : Black, robust, shining, very finely punctured. Head a little broader than the thorax. Antennae piceous filiform, nearly as long as the body; joints elongated; scape luteous. Abdomen bright blue, much shorter than the thorax, legs piceous; posterior tarsi yellow, with piceous tips; wings white; veins pale, Length of body 2/3 line; of the wings one line."

Type locality : Ceylon

Encyrtus rufescens Motschulsky

1863 *Cheiloneurus rufescens,* Motschulsky, *Bull. Soc. Imp. Nat. Moscou,* 36 (3) : 53.
1896 *Comys rufescens,* Howard, *Proc. US nat. Mus.,* 18 : 640.
1909 *Cheiloneurus rufescens,* Schmiedeknecht, *Gen. Ins.,* 97 : 253.
1938 *Eucomys rufescens,* Mani, *Cat. Indian Ins.,* 23 : 85.

Female : Length 1.20 mm. "Figura ut in priori, sed majore, rufo-testaceis, antennis nigro fuscis, his medio pedibusque pallido-testaceis, unguiculis nigris; thorace crebre puncttato, pronoto medio trapezoforme impresso, segmentis subconvexis, lateraliter subprominulis, mesonoto oblongo, subhexagono; alis ciliatis, stigma aungsutato non distincto, vena costali elongata, ramo radiale angustato; axillis subdilatalis; abdomine thoracis latitudine, depresso, supra concavo, nitidissimo, oblongo-ovato, apice acuminato; antennarum clava elongata, 4 articulata, apice elongato-conico-acuminata."

Type locality : Ceylon

Distribution : Ceylon

Host : Lecanium coffeae

Encyrtus solidus Howard

1895 *Encyrtus solidus,* Howard, *Proc. US nat. Mus.,* 18 : 638.

"Male : Length 1.50 mm., expanse 3.40 mm. Form robust, compact; abdomen short, triangular, somewhat compressed from sides; axillae separated at tips; antennae inserted slightly below middle of face, scape short, not widened, funicle segments thick and closely united, pubescence extremely short and very dense; segments 2-5 subequal in length, fifth shorter, first longer, club short; less than fourth and fifth in length. Head faintly granulate mesonotum faintly shagreened. General colour black, faintly glistening; antennal scape brownish, pedicel nearly black; flagellum light brown; all coxae and femora nearly black the femora lighter at tips; front and hind tibiae brown; tegulae brownish; wings hyaline; wings veins dark brown; vein *m* thickened nearly black."

Type locality : Ceylon : Punduloya

Parasyrpophagus Girault

1915 *Parasyrpophagus,* Girault, *Mem. Queensland Mus.,* 4 : 105.
1921 *Parasyrpophagus,* Mercet, *Fauna Iberica,* 270.
1957 *Parasyrpophagus,* Hoffer, *Acta. Soc. ent. Cechosl.,* 54 (4) : 329.
1979 *Parasyrpophagus,* Krombein *et al.,* Hymen. N. America, 1 : 936.

Female : Head highly convex; mandible tridentate; teeth acute; antennae inserted near mouth, maxillary palpi with 4 and labial palpi

with 3 segments; antennae with 11 segments : 1.1.6.3; scape stout, short; funicular segments slightly shorter than pedicel; middle tibial spur equal to metatarsus; hind tibial spur single; wing hyaline; speculum well developed; vein *m* punctiform. Related to *Helegonatopus* Perkins, but veins *pm* and *st* subequal; vein *m* about 2.50 times as long as thick; abdomen elongate, triangular; ovipositor a little exserted.

Male : Antennae inserted on level of the lower orbital border; pedicel globose; funicle with long verticillate hairs; club entire, a little thicker than funicle, but equal to the preceding 3 segments combined; abdomen triangular, short.

Type species : Parasyrpophagus funeralis Girault

Parasyrpophagus lindus Mercet

1921 *Parasyrpophagus lindus,* Mercet, *Fauna Iberica,* 271.
1978 *Parasyrpophagus lindus,* Hayat & Verma, *Orient. Ins.,* 12 (3) 360.

Female : Length 1.20 mm. Frons and vertex metallic-green, shiny; face bluish-green; scutum and pleura green, shiny; scutellum dull green; propodeum and abdomen black, with coppery reflections; antennae yellow; scape brown apically; funicle yellow, slightly obscured; club yellow; wings hyaline; legs yellow.

Head rounded, distinctly convex; frons as long as wide; eyes large, hairy; scape cylindrical; pedicel as long as thick; funicular segments 1-4 subequal, fifth and sixth longer; club large with 3 segments; parapsidal furrows indistinct; fore wings hyaline; abdomen long, about 0.50 of body; ovipositor short.

Male : Length 1.13 mm. Frons longer than wide, shagreened in the vertex, more finely than in female; antennae wholly yellow; sometimes funicle slightly brown; scape slightly expanded in the middle; pedicel a litle longer than thick; funicular segments with long, black, verticillate hairs; first segment elongate, longer than others; club lanceolate, entire a little shorter than the preceding 2 segments combined; mesonotum and scutellum finely shagreened; abdomen much shorter than thorax.

Type locality Madrid.

Distribution Europe; India : Aligarh.

Microterys Thomson

1856 *Sceptrophorus,* Förster, *Hymen. Stud.,* 2 : 34, 38.
1875 *Microterys,* Thomson, *Skand. Hymen.,* 4 : 118, 155.
1900 *Microterys,* Ashmead, *Proc. US Nat. Mus.,* 22 : 339.
1900 *Pseudencyrtus,* Ashmead, *Proc. US nat.Mus.,* 22 : 396.
1900 *Syrphophagus,* Ashmead, *Proc. US nat. Mus.,* 22 : 397.

1904 *Sceptrophagus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 302.
1904 *Microterys,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 303.
1904 *Syrphophagus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 304.
1904 *Pseudoencyrtus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 303.
1909 *Microterys,* Schmiedeknecht, *Gen. Ins.,* 97 : 241.
1913 *Apentelicus,* Fullaway, *Hawaii. Agr. Expt. Sta.,* 26.
1917 *Microterys,* Girault, *Descr. Stellarum,* 13.
1917 *Microterys,* Mercet, *Bol. Soc. Esp. Hist. Nat.,* 17 (2) : 128.
1921 *Microterys,* Mercet, *Fauna Iberica,* 349.
1923 *Microterys,* Timberlake, *Proc. ent. Soc. Washington,* 25 (3) : 58.
1926 *Microterys,* Compere, *Pub. Ent. Calif. Univ.,* 4 (2) : 34.
1928 *Microterys,* Ishii, *Bul. Imp. Agr. Sta. Japan,* 3 (2) : 130.
1939 *Microterys,* Compere, *Bul. ent. Res.,* 30 (1) : 16.
1957 *Microterys,* Erdös, *Acta Zool.,* 3 (1-2) : 37.
1962 *Microterys,* Annecke, *J. ent. Soc. S. Africa,* 25 (2) : 30.
1963 *Syrpophagus,* De Santis, *Ann. Com. Invest. Cient. Buenos Aires,* 4 : 190.
1965 *Microterys,* Bakkendorf, *Ent. Medd.,* 30 (2) : 144.
1971 *Microterys,* Pilipyuk & Sugonyayev, *Ent. Rev.,* 50 (1) : 78-84.
1973 *Microterys,* Rosen, *J. ent. Soc. Australia,* 12 (4) : 248.
1975 *Microterys,* Prinsloo, *J. ent. Soc. S. Africa,* 38 (1) : 19.
1975 *Microterys,* Prinsloo & Rosen, *J. ent. Soc. S. Africa,* 38 (1) : 85.
1976 *Microterys,* Rosen, *Ann. ent. Soic. America,* 69 (3) : 479.
1977 *Microterys,* Hoffer, *Stud. ent. Forest Praha,* 2 (11) : 185.
1979 *Microterys,* Krombein *et al.,* Hymen. N. America, 1 : 1951.

Female : Frontovertex equal to eyes, transverse, with some large scattered punctae; ocellar triangle equilateral; occipital border acute; eyes large, pubescent; mandible tridentate; maxillary palpi with 4 segments, basal segment conical, apical segment truncate; labial palpi with 3 segments; stout; antenna much shorter than body, inserted close to the mouth, with 11 segments : 1.1.6.3; scape, slightly expanded, compressed apically; pedicel larger than the following segments.

Thorax entire; axillae contiguous, slightly convex; fore wing hyaline; vein *m* equal to *st;* vein *pm* short; middle tibial spur equal to metatarsus.

Abdomen triangular, wider than the last segment of thorax; ovipositor concealed.

Male Differs from female in the following characters; smaller eye; antennae inserted near orbital border; scape fusiform, although slightly compressed, much shorter than in female.

Type-species *Microterys neraginoses* (Dalman).

KET TO SPECIES

1. Fore wings hyaline	*M. delhiensis* Subba Rao
Fore wings infuscate or banded	2

2. Fore wings uniformly infuscate; scape 5.50 times longer than wide	*M. kerrichi* Shafee, Alam & Agarwal
Fore wings transverse banded	3
3. Fore wing with a single transverse band; scape a little less than 2.50 times longer than thick	*M. anomalococci* Shafee, Alam & Agarwal.
Fore wings 2 transverse bands	4
4. Club equal to the preceding 2 funicular segments combined	*M. indicus* Subba Rao.
Club equal to the preceding 3 funicular segments combined	*M. mirzai* Shafee, Alam & Agarwal.

Microterys delhiensis Subba Rao

(Fig. 249)

1957 *Microterys delhiensis,* Subba Rao, *Proc. Indian Acad. Sci.,* (B) 46 (6) : 387.

Female : Length 2.10 mm. Face and gena pale yellow; antennae yellow; mandible dark brown; frontovertex brown; mesoscutum light brown; sides of propodeum dark; tergites dark brown; basal tergites at corners brilliant metallic-bluish-green; legs pale yellow.

Frontovertex, face and gena reticulate-punctate; genal suture distinct; mesocutum and tegulae reticulate; scutellum with zig-zag reticulated lines; head in dorsal view wider than long, frontovetex longer than wide and slightly more than 0.33 as wide as the head; ocellar triangle equilateral or nearly so; ocellocular space less than their own diameter, ocelloccipital space at least 4 times ocellar diameter; head in slightly wider than high; antennal sockets located about their own length above mouth, about 2 times this distance from lower orbital border; scrobes well impressed, triangular, meeting above; elevated portion between scrobes rounded; eyes extend downward about 0.50 of length slightly more than that of gena; mandible broad with 3 distinct teeth, apical longest; scape very slightly expanded, slightly compressed only towards apex; pedicel slightly longer and thicker than the first funicular segment; first funicular segment longest; rest equal, progressively thicker; club oblong, 3 times than thick.

Thorax strongly convex. mesoscutum about as long as scutellum; axillae connate; wings hyaline, vein *m* at least 3 times longer than thick; *pm* nearly equal to *m* but subequal to *st.*

Abdomen subtriangular or conic-ovate, longer than wide, shorter than head and thorax combined; tergum strongly depressed; ovipositor slightly exserted.

Male : Length 1.75 mm. Like female except for the following : Face and frontovertex closely reticulately-punctate, metallic-bluish-

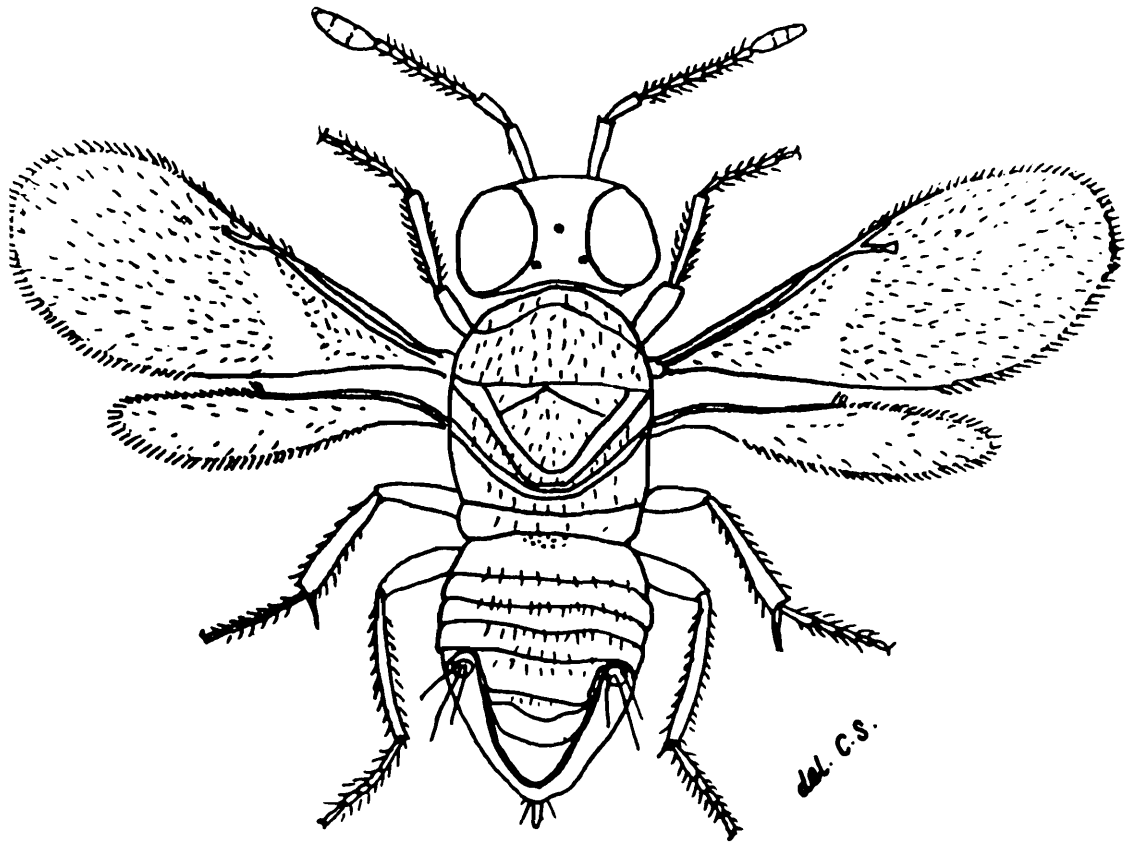

FIG. 249. *Microterys delhiensis* Subba Rao, female. (*Modified from* Subba Rao).

green, with slight red iridescence on vertex only; antennae pale yellow, cylindrical; prothorax brown; axillae yellow, connate; scutellum metallic-green, propodeum yellow; abdomen blackish-brown.

Type locality : New Delhi.

Distribution New Delhi.

Host : Saccharicoccus sacchari (Ckll.)

Microterys kerrichi Shafee, Alam & Agarwal

(Fig. 250)

1975 *Microterys kerrichi,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 69.

Female: Length 1.50 mm. Body reddish-brown; head reddish-brown; radicle, scape, pedicel and basal 3 funicular segments reddish-brown; distal 3 funicular segments whitish-yellow; club black; thorax, legs and abdomen reddish-brown; wings infuscate.

Head in front wider than long; frontovertex longer than wide; ocellar triangle equilateral; ocellocular space less than and ocelloccipital space 2.50 times ocellar diameter; eyes bare; gena equal to transverse diameter of eye; frons between eyes slightly wider than distance between toruli; mandibles tridentate; maxillary palpi with

4 and labial palpi with 3 segments respectively; scape long, cylindrical, about 5.50 times longer than thick; pedicel slightly less than 2 times longer than thick, longer than first funicular segment; first 2 funicular segments about 2 times longer than thick, segments 3-5 subequal, gradually thickened, longer dthan thick, sixth quadrate; club less than 2.50 times longer than thick, shorter than the preceding 3 funicular segments combined.

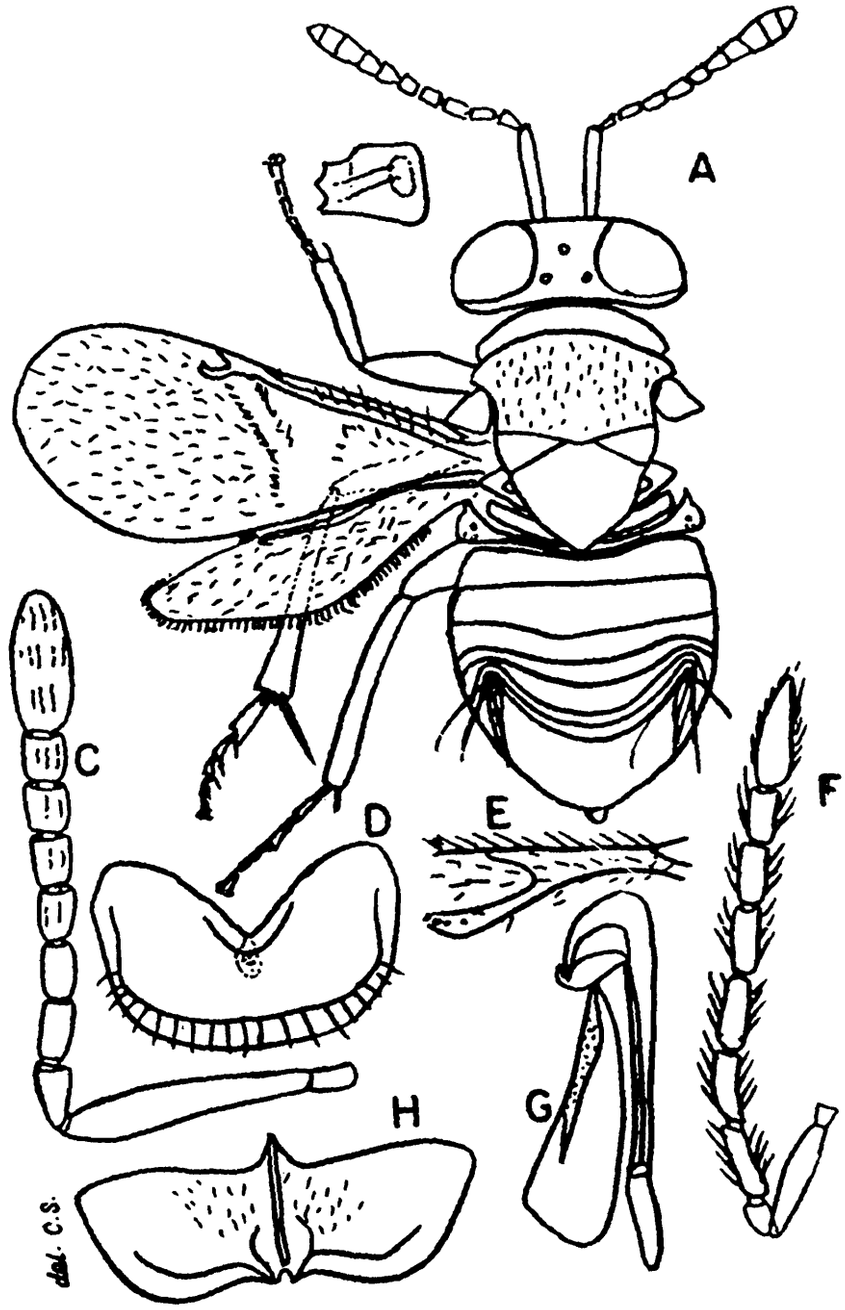

FIG. 250. *Microterys kerrichi* Shafee *et al.* A. Entire body, female; B. Mandible, female; C. Antenna, female; D. Pronotum, female; E. Stigmal venation, female; F. Antenna, male; G. Genitalia, female; H. Subgenital plate, female. (*Modified from* Shafee).

Pronotum broad, front margin notched in the middle, hind margin with 9 rows of setae; scutellum less than 2 times wider than long; axillae slightly separated in the middle; scutellum slightly wider than long; hind margin of scutellum acute; dorsum of thorax with black setae; fore wings slightly more than 2 times longer than wide; costal cell broad; vein *sm* long and with 13 setae; hyaline break present at *sm-m;* vein *m* slightly more than 3 times longer than wide; vein *pm* less than 0.50 of *st;* vein *st* longer than either *m* or *pm* separately; marginal fringe short; hind wings about 4 times longer than wide; marginal fringe about 0.20 of wing width; middle tibial spur slightly longer than metatarsus; 9 short stout pegs at apex of middle tibial tip.

Abdomen subequal to thorax; ovipositor not exserted; middle or anterior margin of subgenital plate cone-like, connected with central notch by a narrow longitudinal groove; third valvulae movably articulated with the second valvifers.

Type locality: Arakonam

Host Cerococcus hibisci Green

Microterys anomalococci Shafee, Alam & Agarwal

(Fig. 251)

1975 *Microterys anomalococci,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 69.

Female : Length 2.10 mm. Body dark brown to black, with metallic-green reflections; head yellowish-brown; radicle, scape below, pedicel and funicular segments 1-3 above infuscated; funicular segments 1-3 below and fourth funicular segment yellowish-brown; scape above and distal 2 funicular segments white; club dark brown; thorax, axillae, pleurites and sternites yellowish-brown.

Frontovertex slightly more than 3 times longer than wide; scape slightly less than 2.50 times longer than thick; funicular segments 1-3 longer than thick; fourth as long as thick, segments 5-6 thicker than long; club 2 times longer than thick.

Vein *sm* with 18 setae; vein *m* distinctly shorter than *pm* and *st* separately; middle tibial spur equal to metatarsus.

Abdomen shorter than thorax.

Type locality : Aligarh

Host Anomalococcus crematogasteri Green on *Acacia arabica.*

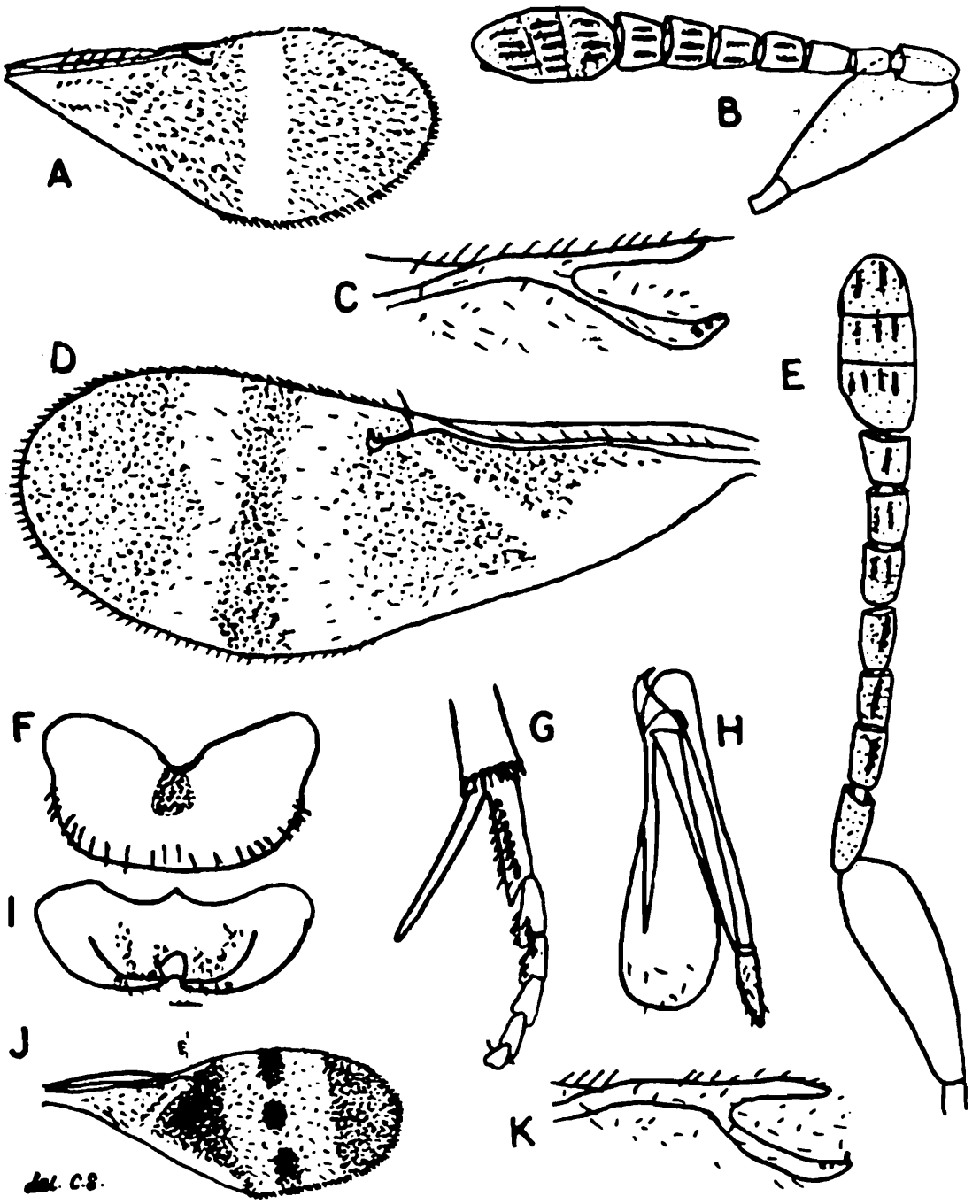

FIG. 251. A-C. *Microterys anomalococci* Shafee *et al.*, female: A. Fore wing; B. Antenna; C. Stigmal venation; D. *Microterys indicus* Subba Rao, female; Fore wing; E-K. *Microterys mirzai* Shafee *et al.*, female: E. Antenna; F. Pronotum; G. Middle leg; H. Genitalia; I. Subgenital plate; J. Fore wing; K. Stigmal venation. (*Modified from* Shafee).

Microterys indicus Subba Rao

(Fig.251)

1977 *Microterys indicus,* Subba Rao, *Proc. Indian Acad. Sci.*, (B) 85 (1) : 13-20.

Female : Length including the ovipositor 3.20-3.50 mm. Head and body completely orange-brown, except the following dark brown with metallic purple reflections : axillae, scutellum, propodeum and

basal 0.67 of abdomen; scape concolorous with head, pedicel and first funicular segment somewhat paler ventrally, otherwise pedicel and first 3 funicular segments and club dark brown, funicular segments 4-6 pale white; all coxae slightly darker than body, rest of legs concolorous; fore wings with 2 hyaline cross-bands beyond venation; hind wings hyaline.

Frontovertex reticulate without conspicuous punctae, very narrow, 0.14-0.16 of head width at front ocellus; ocelli large, in acute-angled triangle, lateral ocelli contiguous with eye; interocellar space less than ocellar diameter; antennal sockets with their upper margins well below the level of lower orbital line, separated from each other by 1.50-1.70 times their own diameter and from clypeal margin by less than their own diameter; scrobes broad, shallow, lateral margins not angled, interscrobal prominence rounded; antennae very long, scape expanded ventrally in the distal 0.67, 3.30 times as long as thick; pedicel short, less than 0.25 of scape; funicular segments longer than thick, progressively shorter, apical segments and club not appreciably thicker than basal funicular segments; club shorter than the last 2 funicular segments combined, truncate apically.

Mesoscutum wider than long; scutellum slightly wider than long, mesoscutum densely setose with approximately 120 setae, scutellum with about 32 setae, one pair of setae very long and originating about 0.67 of the distal end and a pair of long setae at distal end; middle tibial spur slightly longer than metatarsus; fore wings about 0.33 times as broad as long; vein *m* long; slightly shorter than vein *st;* vein *pm* much shorter than vein *st;* hind wings uniformly and densely setose, except for a very short bare basal patch.

Abdomen narrower than thorax, subtriangular, much longer than thorax; ovipositor long, slender, reaching base of abdomen, protruding strongly.

Male : Not known

Type locality Mysore

Distribution : Mysore, Bangalore

Host : Ceroplastes sp. on *Ficus glomerata;* giant *Ceroplastes.*

This species is very near to *M. australicus* Prinsloo but differs from the Australian species in the colour of thorax and abdomen, in the measurements of the antennal segments and the extremely exserted ovipositor sheaths.

Microterys mirzai Shafee, Alam & Agarwal

(Fig. 251)

1975 *Microterys mirzai,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 67.

Female: Length 1.96 mm. Body orange-yellow, with dense black setae; head orange-yellow; scape and fourth funicular segment yellowish-brown; pedicel, funicular segments 1-3 and club dark brown; distal 2 funicular segments white; thorax, legs and abdomen orange-yellow; fore wings infuscate, with paired hyaline lines.

Head in front slightly wider than long, width of frontovertex about 0.16 of head width, slightly more than 2.50 times longer than wide; ocellar triangle acute-angled; lateral ocelli almost contiguous with eye; ocelloccipital space a little more than ocellar diameter; eyes bare; gena equal to transverse diameter of eye; scrobes semi-circular; prominence between antennal sockets more than the width of frontovertex; antennae inserted just above the oral margin; mandibles tridentate, teeth with rounded apices; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape dilated, almost 3 times as long as thick; pedicel distinctly longer than first funicular segment; funicular segments 1-6 gradually becoming thicker, segments 1-4 more than 1.50 times longer than thick; sixth as long as thick; club 2.50 times longer than thick, as long as the preceding 3 funicular segments combined.

Pronotal hind margin with 11 pairs of setae; mesoscutum 1.50 times wider than long; axillae contiguous; scutellum as long as wide; equal to mesoscutum, posterior margin rounded; fore wings slightly less than 2.50 times longer than wide; costal cell broad; vein *sm* long, with 12 setae; vein *m* as long as vein *st,* distinctly longer than vein *pm;* marginal fringe short; tip of middle tibiae with 9 stout pegs; middle tibial spur longer than metatarsus. Abdomen as long as thorax; ovipositor unexserted.

Type locality : Dehra Dun

Host : Coccus sp.

Species Incertae Sedis

Microterys aeroginosus (Dalman)

1820 *Encyrtus aeroginosus,* Dalman, *Svenk. Vet. Akad. Handl.,* 4 : 170.
1875 *Microterys aeroginosus,* Thomson, *Hym. Skand.,* 4 : 163.
1909 *Microterys aeroginosus,* Schmiedeknecht, *Gen. Ins.,* 97 : 242.
1973 *Syrpophagus aeroginosus,* Hayat, *Proc. zool. Soc. Calcutta,* 25 : 38.

Type locality : Europe

Distribution : Europe; India : Aligarh

Host : Syrphid

Pseudmicroterys Shafee, Alam & Agarwal

1975 *Pseudmicroterys,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 71.

Female : Head and thorax orange-yellow; fore wings hyaline.

Head in front wider than long; frontovertex longer than wide; gena not shorter than eye; mandibles obscurely tridentate; maxillary palpi with 4 and labial palpi with 3 segments respectively; antennae inserted below lower level of eyes with 11 segments : funicle 6 segmented; club 3 segmented, distinctly shorter than funicle; scape only slightly flattened subapically.

Pronotal anterior and posterior margins concave and convex respectively; axillae triangular, contiguous; scutellum rounded apically; fore wings costal cell broad; veins *m, pm* and *st* well developed; marginal fringe short; *m* punctiform or nearly so; *pm* longer than *st.*

Abdomen slightly shorter than thorax; ovipositor not exserted; subgenital plate of uniform width, central notch of posterior margin without laterally directed ridges; third valvulae short and blunt; outer plates of ovipositor very wide with broad apex and an oblique ridge extending from distal end of anterior margin.

Type-species : Pseudmicroterys burksi Shafee *et al.*

This genus differs from *Microterys* Thomson in the following characters : Fore wings hyaline; funicle uniformly yellow; pronotum concave in front, convex behind; central notch of posterior margin of subgenital plate without laterally directed ridges; outer plates of ovipositor very wide with broad apex and an oblique ridge extending from distal end of anterior margin; in male club biarticulate.

KEY TO SPECIES

1. Frontovertex distinctly less than 2 times longer than wide; ocellar triangle obtuse; prominence between antennal sockets less than the width of frontovertex; scape less than 4 times longer than thick; middle tibial spur equal to metatarsus	2
Frontovertex narrow, 2.50 times longer than wide; ocellar triangle acute; prominence between antennal sockets more than the width of frontovertex; scape more than 5 times longer than thick; vein *pm* subequal to *m* and distinctly shorter than *st;* middle tibial spur shorter than metatarsus	*P. angustifrons* Shafee, Alam & Agarwal
2. Funicular segments 1-5 longer than thick, sixth quadrate; gena black basally; vein *pm* equal to *m,* shorter than *st.*	*P. cerococci* Shafee, Alam & Agarwal
First funicular segment slightly longer than thick, 2-6 wider than long; gena yellow basally; vein *pm* distinctly longer than *m* and subequal to *st*	*P. burksi* Shafee, Alam & Agarwal

Pseudmicroterys angustifrons Shafee, Alam & Agarwal

(Fig. 252)

1975 *Pseudmicroterys angustifrons,* Shafee *et al., Aligarh Muslim Univ. Mon.,* (Zool.) 10 : 76.

Female : Length 1.64 mm. Body orange-yellow.

Frontovertex narrow, 0.20 of head width, 2.50 times longer than wide; ocellar triangle acute; ocelloccipital space 3 times ocellar diameter; gena slightly shorter than eye; prominence between toruli more than the width of frontovertex; antennae inserted distinctly below the level of lower orbital border; scape more or less cylindrical, slightly more than 5 times longer than thick; pedicel about 2 times longer than thick, longer than first funicular segment; first funicular segment slightly more than 2 times longer than thick, second and third subequal, slightly more than 1.50 times longer than thick; fourth slightly longer than thick; fifth and sixth thicker than long; club about 2 times longer than thick, slightly longer than the preceding 3 funicular segments combined.

Fore wings with vein *pm* equal to *m* and distinctly shorter than *st;* middle tibial spur shorter than metatarsus.

Abdomen distinctly shorter than thorax.

Type locality : Nasik

Distribution : Karnul, Gudalur, Nasik

Hosts : Cerococcus hibisci Green feeding on *Hibiscus rosasinensis; Anomalococcus crematogasteri* Green feeding on *Prosopis spicegera* Linn.

Pseudmicroterys cerococci Shafee, Alam & Agarwal

(Fig. 252)

1975 *Pseudmicroterys cerococci,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 76.

Female : Resembles *P. burksi* Shafee *et al.,* except in the following characters : Length 1.89 mm. Body orange-yellow; head yellowish-brown; antennae yellow except the infuscate fifth and sixth funicular segments basally and club.

Gena longer than width of frontovertex; scape slightly less than 4 times longer than thick; pedicel subequal to first funicular segment; funicular segments 1-3 subequal, about 1.50 times longer than thick, segments 4-5 subequal, slightly longer than thick, sixth quadrate; club 2.50 times longer than thick, about as long as the preceding 3 funicular segments combined.

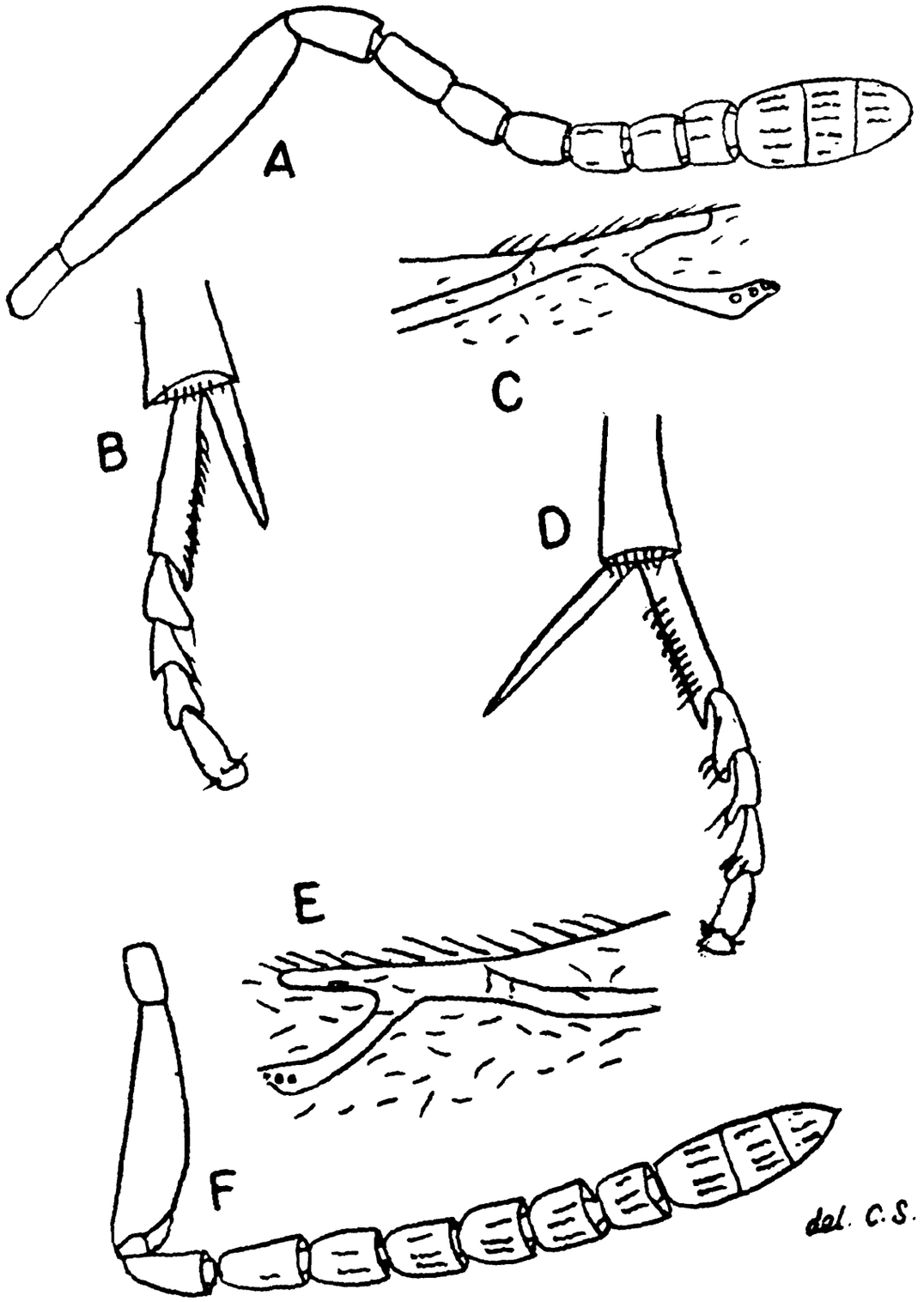

FIG. 252. *Pseudmicroterys angustifrons* Shafee *et al.*, female : A. Antenna; B. Middle leg; C. Stigmal venation; D-F. *Pseudmicroterys cerococci* Shafee *et al.*, female : D. Middle leg; E. Stigmal venation; F. Antenna.

Type locality : Mysore, Tumkur

Distribution : Karnul, Gudalur, Patna

Host : Cerococcus hibisci Green feeding on *Hibiscus rosasinensis.*

Pseudmicroterys burksi Shafee, Alam & Agarwal

(Fig. 253)

1975 *Pseudmicroterys burksi,* Shafee, *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 73.

Female : Length 1.60 mm. Body orange-yellow; with dense black setae; head orange-yellow; ocelli white; except the infuscate club, antennae yellow; wings hyaline; legs orange-yellow; abdomen yellow in basal 0.25 and ventrally, otherwise infuscate.

Head wider than long in facial view; frontovertex wide, 0.33 of head width, slightly longer than wide; ocellar triangle obtuse-angled; ocellocular and ocellocccipital spaces less than ocellar diameter; eyes bare; gena longer than eye; antennae inserted below lower orbital border; frons between eyes wider than distance between toruli; genal suture distinct; mandibles tridentate, apical tooth acute, middle tooth rounded, lower tooth truncated; maxillary palpi with with 3 segments; scape somewhat dilated apically, slightly more than 2.50 times longer than thick; pedicel slightly longer than first funicular segment; first funicular segment slightly longer than thick, segments 2-6 gradually thicker than long; club 3 segmented, slightly less than 2 times longer than thick, distinctly shorter than the preceding 3 funicular segments combined.

Scutum less than 2 times wider than long; axillae contiguous; scutellum wider than long, longer than scutum, rounded behind; fore wings slightly more than 2 times longer than wide; costal cell broad; vein *sm* long and with 10 setae; vein *m* slightly less than 3 times longer than wide; vein *pm* longer than *m* and subequal to *st;* marginal fringe short, spaced by a distance equal to 0.33 of hair; hind wings slightly more than 3 times longer than wide; marginal fringe short and spaced by a distance equal to 0.25 of hair; 8 stout pegs at tip of tibia; middle tibial spur about as long as metatarsus.

Abdomen slightly shorter than thorax; ovipositor not exserted; basal 0.50 of ovipositor concealed by subgenital plate; paratergites absent; subgenital plate of uniform width, a notch in its posterior margin; first valvifers with one of the articular knobs well developed; third valvulae movably articulated with second valvifers.

Male : Length 1.33 mm. Differs from female as follows : frontovertex 1.50 times wider than long; frons between eye more than 2 times the distance between toruli; scape fusiform, about 2 times as long as thick; pedicel slightly thicker than long, distinctly shorter than first funicular segment; funicular segments 6, longer than thick, gradually shorter; first funicular segment about 2 times as long as thick, sixth segment slightly longer than thick; club 2 segmented, slightly shorter than the preceding 2 funicular segments combined; funicle and club with short hairs.

Type locality : Aligarh

Distribution : Arakonam, Mysore, Bangalore, Chennapatana, Karnul, Gudalur

Host : Anomalococcus crematogasteri Green on *Acacia arabica* Willid.

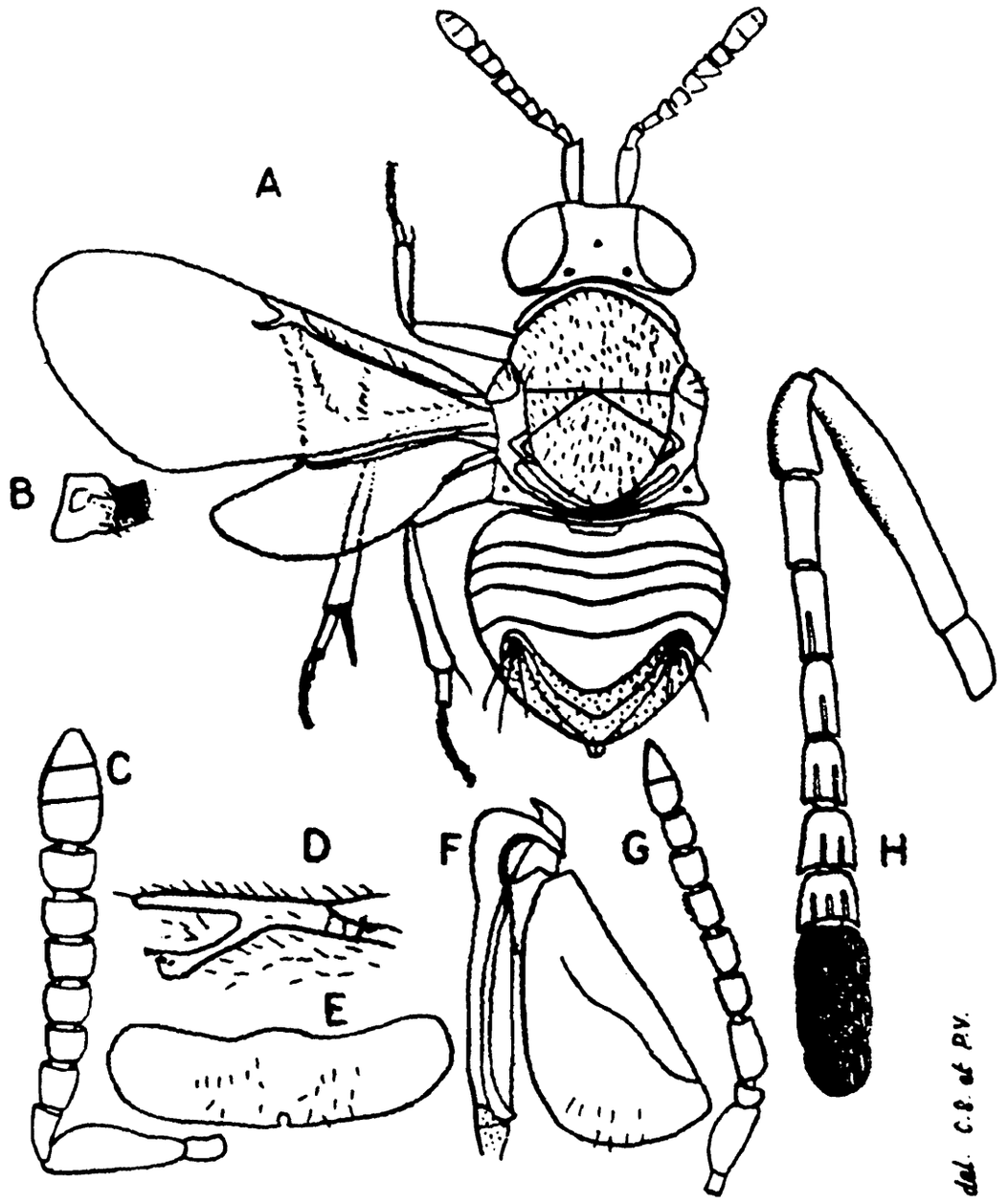

FIG. 253. *Pseudmicroterys* Shafee *et al.*, A. Body entire, female; B. Mandible, female; C. Antenna, female; D. Stigmal venation, female; E. Subgenital plate, female; F. Genitalia, female; G. Antenna, male; (*modified from* Shafee) H. *Tachardiaephagus tachardiae* Howard, female; Antenna.

Tachardiaephagus Ashmead

1896 *Encyrtus* (partim), Howard, *Proc. US nat. Mus.*, 18 : 637.
1904 *Tachardiaephagus,* Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 303.
1909 *Tachardiaephagus,* Schmiedeknecht, *Gen. Ins.*, 97 : 249.

1913 *Lissencyrtus,* Cameron, *Indian forest Rec.,* 4 : 99.
1916 *Tachardiaephagus,* Girault, *Jahrg. Soc. Ent. Stuttgart.,* 31 : 43.
1938 *Tachardiaephagus,* Mani, *Cat. Indian Ins.,* 23 : 92.

This genus resembles *Pseudencyrtus* very closely, but is separated as follows : Lateral ocelli contiguous to eye; club entire, not reaching 0.33 of antennae; funicular segments 1-5 longer than thick, sixth quadrate; all segments clavate apically; abdomen shortly oval, shorter than thorax; hairs on funicle longer than 0.50 of the thickness of segments; vein *pm* well developed, but not longer than *st;* body not flattened; mandibles tridentate; pedicel longer than first funicular segment.

This genus is related to *Microterys* Thomson, but is separated by the slender scape and hyaline fore wings.

Type-species : Tachardieaphagus thoracicus Ashmead.

Tachardiaephagus tachardiae (Howard)

(Fig. 253 & 254)

1896 *Encyrtus tachardiae,* Howard, *Proc. US nat. Mus.,* 18 : 637.
1904 *Tachardiaephagus thoracicus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 303.
1909 *Tachardiaephagus thoracicus,* Schmiedeknecht, *Gen. Ins.,* 97 : 249.
1913 *Lisencyrtus troupi,* Cameron, *Indian forest Rec.,* 4 : 100.
1916 *Tachardiaephagus thoracicus,* Girault, *Jahrg. ent. Stuttgart,* 31 : 43.
1928 *Tachardiaephagus tachardiae,* Ferrière, *Bull. ent. Res.,* 19 : 171.
1930 *Tachardiaephagus tachardiae,* Glover, *Bull. ent. Res.,* 21 : 261.
1933 *Tachardiaephagus tachardiae,* Miller, *Sc. Ser. Dept. Agric. S.S. & F.M.S.,* 11 : 24. pl. 3.
1935 *Tachardiaephagus tachardiae,* Ferrière, *Bull. ent. Res.,* 26 : 391.
1938 *Tachardiaephagus tachardiae,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 16.
1975 *Tachardiaephagus tachardiae,* Hayat, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 9 : 71.

Female : Length 2.00 mm. Body reddish-orange; legs paler than thorax; head dark blue; pronotum dark; mesonotum bright metallic-blue; abdomen dark violet; antennae testaceous; scape pale testaceous, more yellow than funicle; club fuscus; thorax smooth and shiny; antennae equal to body and thorax combined; pedicel 3 times longer than thick; ocellar triangle equilateral; lateral ocelli distinctly separated from orbit; clypeus obtusely carinate in the middle.

Male : Length 1.50 mm. Body metallic-blue-green; scutellum with strong coppery reflections; mesonotum brown laterally; legs, tegulae and mesopleura concolorous with thorax; tibiae somewhat darker; antennae dark brown; scape and pedicel black above; wings hyaline, veins dark brown; antennae inserted in the middle of face; scape not enlarged; funicular segments subcylindrical, with dense

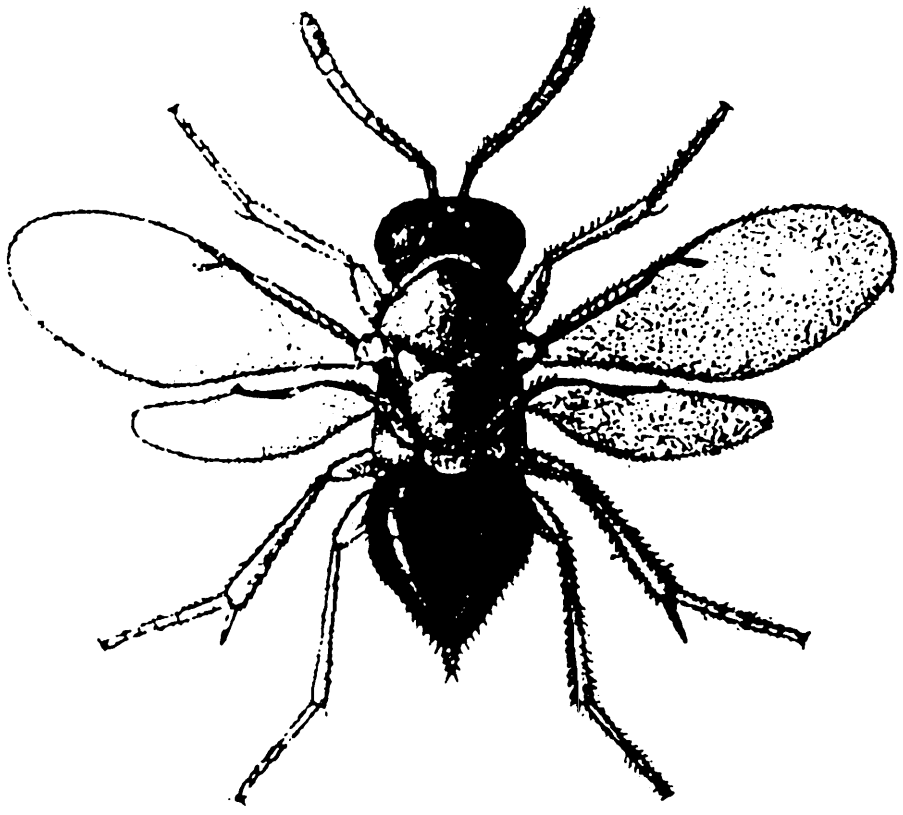

FIG. 254. *Tachardiaephagus tachardiae* (Howard), female.

hairs; axillae contiguous; vein *m* very short; vein *pm* and *st* subequal; mesonotum very finely shagreened, shiny.

Type locality : Ceylon : Punduloya

Distribution : India, Ceylon, Pakistan, Malaya

Host : Tachardia lacca

Tachardiaephagus tachardiae var. somervilli (Mahdihassan)

1923 *Tachardiaephagus somervilli,* Ferrière, *Bull. ent. Res.,* 19 : 171.
1928 *Lissencyrtus somervilli,* Mahdihassan, *J. Sci. Assoc. Maharaja's Coll. Vizianagram,* 1 : 1.
1935 *Tachardiaephagus tachardiae* var. *somervilli,* Ferrière, *Bull. ent. Res.,* 26 : 391.
1938 *Tachardiaephagus tachardiae* var. *somervilli,* Mani, *Cat. Indian Ins.,* 23 : 92.

Head vertex, temples and cheeks dark green like *T tachardiae* and the face and inner margin of eyes reddish.

Host : Lac-insect.

Aphidencyrtus Ashmead

1875 *Encyrtus* (partim), Mayr, *Verh. zool.-bot. Ges. Wien,* 25 : 702.
1900 *Aphidencyrtus,* Ashmead, *Proc. US nat. Mus.,* 22 : 398.
1904 *Aphidencyrtus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 304.
1909 *Aphidencyrtus,* Schmiedeknecht, *Gen. Ins.,* 97 : 251.
1921 *Aphidencyrtus,* Mercet, *Fauna Iberica,* 343.

1923 *Aphidencyrtus,* Gahan, *Proc. ent. Soc. Washington,* 25 (9) : 187-188.
1941 *Aphidencyrtus,* Narayanan, *Indian J. Ent.,* 3 (1) : 62.
1952 *Aphidencyrtus,* Risbec, *Mem. Inst. Sci. Madagascar Ser. E. Ent.,* 2 : 6, 52.
1961 *Aphidencyrtus,* Alam, *Beitr. Ent.,* 11 (7-8) : 803-807.
1963 *Aphidencyrtus,* De Santis, *Ann. Com. Invest. Cient. Buenos Aires,* 4 : 199.
1965 *Aphidencyrtus,* Hoffer, *Acta Ent. Bohemoslov,* 62 (2) : 110.
1967 *Aphidencyrtus,* Trjpitzin, *Akad. Nauk. SSSR Zool. Inst.,* 41 : 202.
1969 *Aphidencyrtus,* Graham, *Polskie Pismo Ent.,* 39 (2) : 252.
1970 *Aphidencyrtus,* Hoffer, *Stud. Ent. Forest Prahae,* 1 (3) : 25, 81.
1975 *Aphidencyrtus,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 91.
1979 *Aphidencyrtus* Krombein *et al.,* Hymen. N. America, 1 : 949.

Female : Head as wide as thorax; frontovertex equal to eye; occiput excavate; occipital border acute; ocellar triangle equilateral; lateral ocelli close to eyes; eyes oval, glabrous or sparsely pubescent; mandible tridentate, internal tooth truncate; maxillary palpi with 4 and labial palpi with 3 segments; antennae filiform, inserted close to the mouth, with 11 segments : 1.1.6.3; scape enlarged; pedicel larger than the following segments; funicle gradually swollen apically; apical segments much thicker than first funicular segment; funicle moniliform or submoniliform; club enlarged, much thicker than funicle, reduced apically.

Thorax without parapsidal furrows; axillae contiguous, convex, subtriangular; fore wing hyaline, with speculum complete; vein *m* as long as thick; vein *pm* short; vein *st* shorter than *m* or slightly longer; middle tibial spur equal to metatarsus; hind tibial spurs double.

Abdomen subtriangular, shorter than thorax; ovipositor concealed.

Male : Very similar to female, but differs in the following : Frontovertex longer than eye; ocellocular space equal to ocellar diameter; pedicel as long as first funicular segment; club not much larger than the rest of antennae.

Type-species : Aphidencyrtus aphidiphagus Ashmead

KEY TO SPECIES

1. Pedicel longer than the following 2 funicular segments combined.	*P. aligarhensis* Shafee, Alam & Agarwal
Pedicel subequal to the following 2 funicular segments combined.	*A. hofferi* Hayat

Aphidencyrtus aligarhensis Shafee, Alam & Agarwal

(Fig. 255)

1975 *Aphidencyrtus aligarhensis,* Shafee *et al., Aligarh Muslim Univ. Mon.* (Zool.) 10 : 91.

Female : Length 1.17 mm. Body dark brown, with metallic-green reflections; antennae yellow, with obscure infuscation; legs yellow; abdomen yellowish-brown, except the dark brown tip.

Head in front wider than long; frontovertex slightly longer than wide; ocellar triangle obtuse; ocellocular space less than ocellar diameter; eyes bare; gena longer than eye; scrobes deep, converging above; prominence between antennal sockets slightly less than 0.50 of width of frons between eyes; antennae inserted just below the level of lower orbital borders; mandibles with 2 teeth and a truncature; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape cylindrical, slightly less than 5 times longer than thick; pedicel longer than the following 2 funicular segments combined; funicular segments 1-6 gradually thicker; first 2 funicular segment shorter, slightly thicker than long, third as long as thick, segments 4-6 distinctly thicker than long, club slightly more than 2 times longer than thick, slightly longer than the preceding 3 funicular segments combined; funicular segment 3 to the third club segment with 1, 2, 2, 2, 2, 2 and 2 sensoria respectively.

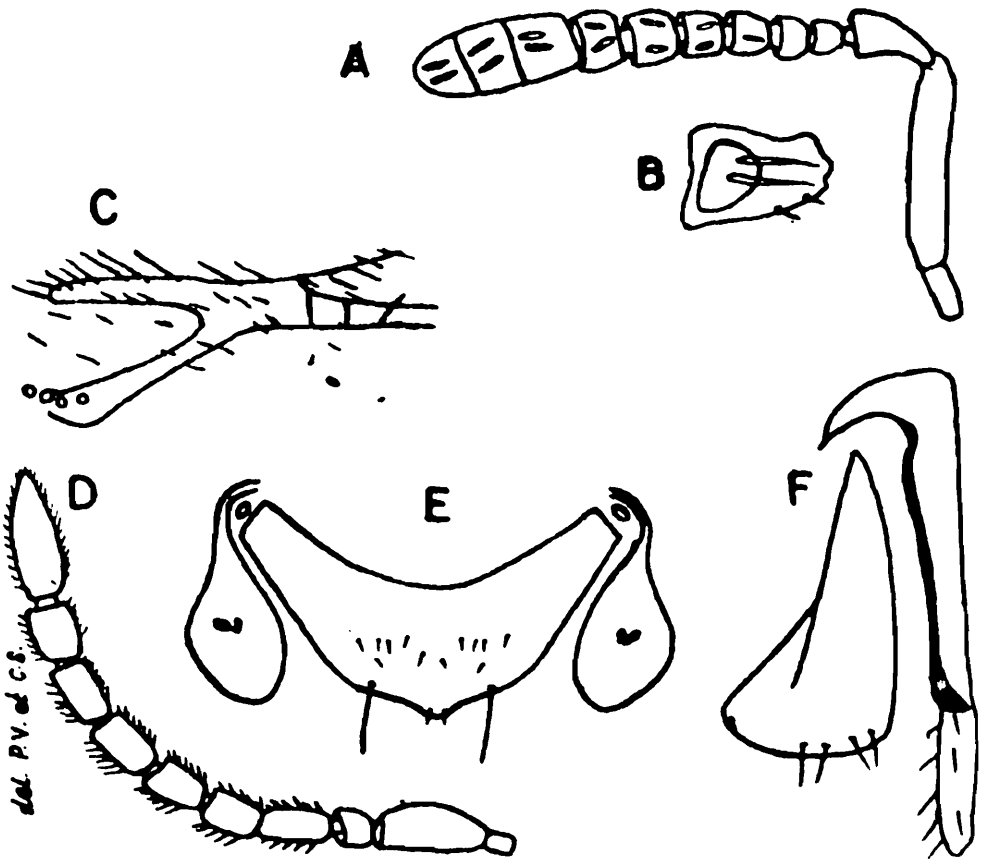

FIG. 255. *Aphidencyrtus aligarhensis* Shafee *et al.*, A. Antenna, female; B. Mandible, female; C. Stigmal venation, female; D. Antenna, male; E. Apex of abdomen, female; F. Genitalia, female. (*Modified from* Shafee).

Scutellum entire; axillae contiguous; scutellum rounded apically; fore wings slightly more than 2 times longer than wide; costal cell broad; vein *sm* with 11 long setae; vein *pm* slightly longer than *m* and slightly shorter than vein *st;* marginal fringe short, separated by 0.33 of their length; hind wings slightly more than 4 times longer than wide; pegs at tip of middle tibia.

Abdomen shorter than thorax; ovipositor arises from middle of abdominal venter, slightly protruded.

Type locality : Aligarh

Distribution : Uttar Pradesh, Rajasthan

Host : Psylla sp. on *Cirtus* sp.

Aphidencyrtus hofferi Hayat

1973 *Aphidencyrtus hofferi,* Hayat, *Proc. zool. Soc. Calcutta,* 25 : 35.

Female : Length 1.26 mm. Head bluish-green, with bronzy lustre on posterior part of vertex; gena violet; scape brown, apex and ventral margin yellowish-brown; pedicel brownish-black, apex yellowish; funicular segments brownish-yellow; club brown; club brown; metanotum and propodeum blackish; mesopleura violet; wings hyaline; middle coxae brown; femora with a brownish-yellow patch in the middle, last tarsal segment dusky; rest of legs whitish-yellow; abdomen bluish-green.

Frontovertex reticulate with scattered aciculate punctate, wider than eye and about 1.67 times longer than wide; ocellar triangle slight obtuse-angled; lateral ocelli close to eye; ocelloccipital space subequal to ocellar diameter; gena shorter than eye; scrobes deep, rounded above; antennal sockets removed from facial margin by a distance equal to length of a socket; mandibles with 2 teeth and a truncature; maxillary palpi with 4 and labial palpi with 3 segments respectively; scape more than 5 times as long as thick in the middle; pedicel as long as the following 2 funicular segments combined; funicular segments longer than thick, first 2 segments distinctly shorter than distal 4 segments; club shorter than preceding 4 segments combined.

Mesonotum and scutellum bluish-green, with bronzy lustre on scutellum; fore wings 2.33 times longer than wide; costal cell with one complete and one incomplete row of cilia; vein *sm* with 10 cilia; basal triangle with about 25 cilia and a row of cilia below vein *sm;* speculum with 5 long cilia; filum spinosum with 3 peg-like setae; marginal fringe very short; hind wings hyaline; fore coxa except apex, femora basally and apical 0.33 and last 3 tarsal segments black; rest of leg yellow; middle tibial spur subequal in length to metatarsus; hind coxae, femora except base at apex, and a patch on basal 0.33 of tibiae brownish; last tarsal segment dusky; rest of leg whitish.

Abdomen slightly longer than thorax; first tergite not longer than following tergite; ovipositor concealed.

Type locality Aligarh

Tachinaephagus Ashmead

1904 *Tachinaephagus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 304.
1909 *Tachinaephagus,* Schmiedeknecht, *Gen. Ins.,* 97 : 249.
1917 *Tachinaephagus,* Girault, *Ins. Inscit. Memst.,* 5 (7-9) : 142.
1921 *Australencyrtus,* Johnson & Tiegs, *Proc. R. Soc. Queensland,* 33 (6) : 118-123.
1921 *Stenosterys,* Dodd in Froggatt, *Agr. Gaz. N.S. Wales,* 32 (10) : 728.
1924 *Tachinaephagus,* Girault, *Homo Perniciosus New Hym.,* 4 : ?
1956 *Austrahomalotylus,* Risbec, *Ann. Parasit. comp.* 30 (1-2) : 169.
1960 *Trachinaephagus,* Ghesquiere, *Rev. Zool. Bot. Africaines,* 62 (1-2) : 53-58.
1978 *Tachinaephagus,* Subba Rao, *Bull. ent. Res.,* 68 : 65-75.
1979 *Tachinaephagus,* Krombein *et al.,* Hymen. N. America, 1 : 955.

Closely related to *Syrpophagus* and *Epiencyrtus,* but *pm* longer than *st* and shorter than *m* and *st;* head convex with scattered punctae lateral ocelli remote from eye mandibles tridentate, antennae inserted just below the level of lower orbital borders, toruli remote, scrobe shallow; scape cylindrical; funicular segments not longer than thick; club short; not 0.33 of funicle; axillae contiguous; eyes hairy; mandibles tridentate; fore wings infuscate; vein *st* not longer than *m-pm* combined; abdomen oval; ovipositor slightly exserted.

Type species : Tachinaephagus zealandicus Ashmead.

Tachinaephagus ceylonicus (Subba Rao)

1972 *Zeteticontus ceylonicus,* Subba Rao, *Entomophaga,* 17 (2) : 191.
1976 *Tachinaephagus ceylonicus,* Subba Rao, *J. nat. Hist.* 10 : 688.
1978 *Tachinaephagus ceylonicus,* Subba Rao, *Bull. ent. Res.,* 68 : 72.

Female : Head almost black; thorax dark brown, turning to light brown on the pleuron; abdomen dark brown; vertex and face with a rather weak dark bluish lustre; scutellum with coppery-green reflections; scape yellowish-brown; funicle and club brown; pubescence of body wholly black to dark brown; punctation on head and thorax very small, sparse; space between punctae on vertex and face somewhat delicately microscopically striated.

Head moderately thick fronto-occipitally; above appearing semi-circular, with the occipital outline broadly roundly emarginate; ocelli large, in a triangle whose base is about 1.30 times as long as its sides; ocelloccipital equal to ocellar diameter; gena not well developed; with a deep vertical groove, less than 0.50 of eye; toruli thick apart, rather nearer to the ocular margin than to the oral margin; antenna moderately short, strongly clavate; scape very slightly dilated

beneath; at its thickness only about 3.75 times the length; pedicel rather long, about 0.33 of scape; first funicular segment shorter than pedicel, distinctly longer than thick; funicular segments 2-6 progressively shorter; club longer than pedicel; terminal segment rounded.

Axillae not separated; scutellum flat, moderately polished; wings with dense discal pilosity; veins *m : pm : st* ratio 9 : 5 : 6; discal ciliae basad vein *sm* very dense and uniform, characteristic; marginal fringe short and dense.

Abdomen a little shorter than thorax, somewhat triangular; ovipositor distinctly protruded.

Male : Not known.

Type locality : Ceylon, Malaysia

Host : Dacus dorsalis Coq.

HUNTERELLUS – GROUP OF GENERA

Ixodiphagus Howard

1907 *Ixodiphagus,* Howard, *Ent. News,* 18 (9) : 377.
1963 *Ixodiphagus,* Hoffer, *Acta. Ent. Mus. Nat. Pragae* 35 : 591.
1979 *Ixodiphagus,* Krombein *et al.,* Hymen. N. America, 1 : 949.

Type-species : Ixodiphagus texanus Howard

Ixodiphagus mysorensis Mani

1941 *Ixodiphagus mysorensis,* Mani, *Indian J. Ent.,* 3 (1) : 29.

Female : Length 1.00 mm. Body black; head black; pubescence brown; eyes pubescence dense and pale brown; antennae dark brown; scape brown basally, dark brown apically; thorax black shagreened; pubescence brown; wings faintly browned behind vein *sm* and *m* punctiform; legs except for the light brown tarsi, tibiae and apical 0.50 of femora, very dark brown; abdomen dark brown.

Head from above 2 times as thick as thick as long, somewhat thicker than thorax, occipital margin distinct, shagreened; interocellar space about 4 times ocellocular space, also ocellocular space subequal to ocellar diameter; antennae inserted in the middle of face; terminal club segment lighter in the middle of face; terminal club segment lighter than rest of antennae; pedicel a little shorter than scape; scape compressed; axillae separated by a faint median carina; fore wings with vein *pm* shorter than *st* and 2 times the *m*.

Male : Very similar to female but pedicel 0.50 of scape.

Type locality : Mysore

Host : Cattle tick *Ornithodorus* sp. (Argantidae)

GENSUS INSERTAE SEDIS

Epitetracnemus Girault

1915 *Epitetracnemus,* Girault, *Mem. Queensland Mus.*, 4 : 164.

Body metallic green; reticulately squamose; scape compressed; club equal to funicle; face inflexed; second tooth of mandible broadly truncate; axillae separate; vein *m* distinctly longer than thick; very short; *pm* still shorter; vein *st* pronotum transverse; antennae with 11 segments, inserted about the level of lower orbital border; no annellus; club with 3 segments; funicle with 6 segments; fore wing infumate from the bend of vein *sm* to tip; with 6 rounded spots; speculum present.

Type-species *Epitetracnemus sexguttatipennis* Girault

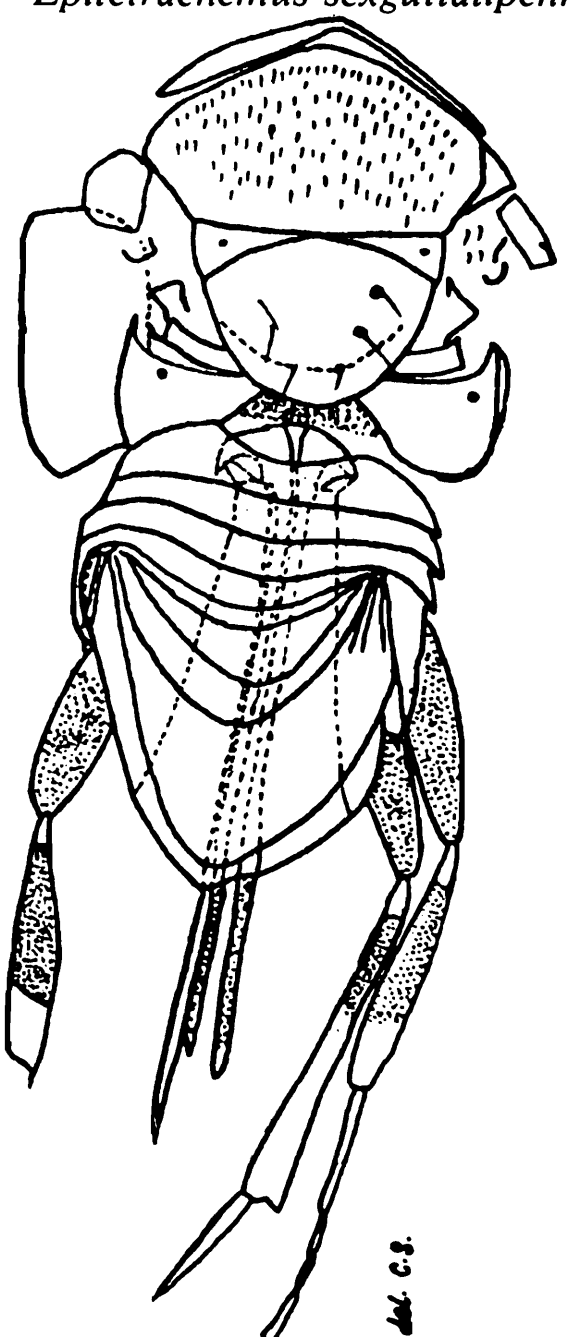

FIG. 256. *Epitetracnemus quadriguttatus* Girault, female : Thorax and abdomen. (*Modified from* Hayat).

Epitetracnemus quadriguttatus Girault

(Fig. 256 & 257)

1932 *Epitetracnemus quadriguttatus,* Girault, *Private Pub.,* 3.

1961 *Epitetracnemus quadriguttatus,* De Santis, *Revt. Mus. La Plata,* (NS) 7 (Zool.) : 123-172.

1978 *Epitetracnemus quadriguttatus,* Hayat, *J. nat. Hist.,* 12 : 33-36.

Girault's original description "Epitetracnemus quadriguttatus. Ovipositor 0.33 of abdomen, apex white; club 0.75 of funicular; blue; white; funicular 4-6 tarsi, knees, distal 0.50 of tibia one, 0.66 of tibia 2, basal 0.50 of femur 2, apex of tibia 3 thickly, elongate spur; wing fuscous from bend of submg.-vein, 4 round clear spots, 2 pairs opposites, distal at apex veins. Funicular quadrate, enlarging. Scape clavate, dilaton moderate. Red scale, India, L.J. Newman."

Female : Head dark brown with metallic shine; leg colour and infuscation of fore wing as given in the original description; otherwise colour of thorax and abdomen similar to *Habrolepis obscura* Compere & Annecke, sculpture of thorax like *H. occidua* Annecke & Mynhardt.

Frontovertex narrow; ocellar triangle acute; lateral ocelli almost contiguous to eye; scape about 5.50 times as long as thick; maxillary palpi with 4 and labial palpi with 3 segments respectively; middle tibial spur longer than metatarsus; ovipositor from between bases of hind coxae, exserted, longer than middle tibia; third valvulae longer than middle tibial spur

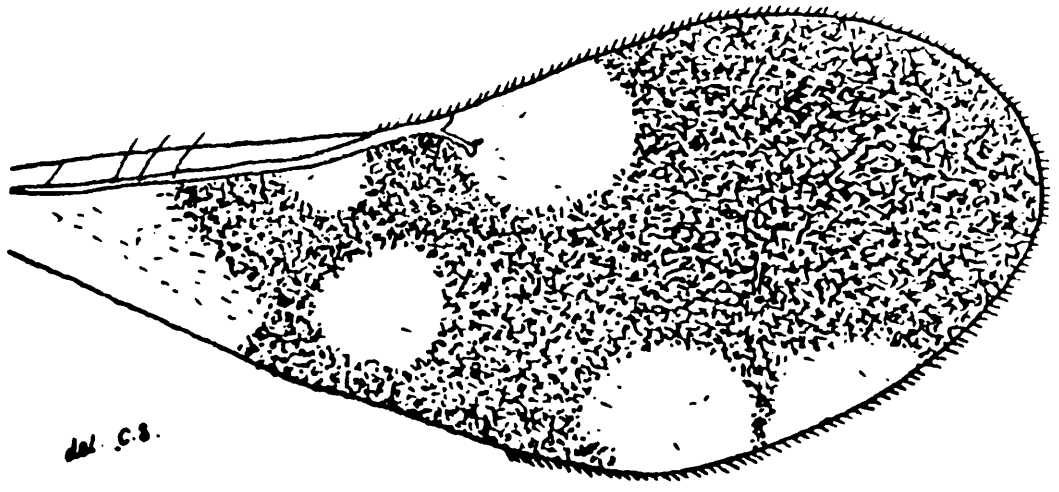

Fig. 257. *Epitetracnemus quadrigutattus* Girault, female; Fore wing.

Hayat remarks as below : "In the mandibular dentition, shape, sculpture and setation of the scutellum and fore wing venation and markings *quadrigutattus* is not unlike the species of *Anabrolepis* Timberlake and *Habrolepis* Förster that lack the lamelliform setae. It is not, however, considered wise to transfer this species to either of these genera for the reasons given under *E. sexguttatipennis.*

The apparent similarity between *guadriguttatus* and some of the species of *Habrolepis* and *Anabrolepis* make it necessary to know the systematic position of the genus *Epitetracnemus*. So a request was made to Dr D.P Annecke to examine the holotype of this species and also consulted Girault's (C. 1932) unpublished manuscript and given me the following notes :

1. "Mandible apparently with a strong ventral tooth and a dorsal truncation of which the lower angle appears to be somewhat developed and pointed, resembling a tooth.

2. Fore wing with venation and marking which fit Timberlake's (1920) description of those of *Anabrolepis extranea* Timberlake well enough to suggest that the two species are congeneric.

3. Scutellum with the shape, sculpture and setation of one of the species of *Habrolepis* that lack the lamelliform setae. For that matter, the scutellum could be that of an *Adelencyrtus*. There are 2 pairs of setae, one apical and other subapical, which are unusually strong.

4. Antennal scape considerably expanded, about 2.80 times as long as greatest breadth. Note the Girault's (1915 : 165, line 11) description of 'funicular segments 1-4 short, 2 times longer than thick' is, of course, not correct : as he points out in his unpublished manuscript, it should read '2 times thicker than long.'

5. In his MS, Girault notes that *Epitetralophidea* (Girault, 1915 : 176) may be the same as *Epitetracnemus* a further twist to a matter already complicated by the appalling state of Girault's material.

6. The type of *sexguttatipennis* consists of the head, one antenna attached, a whole fore wing, except part of basal triangle, and a fore leg. The coverslip has been crushed directly over the head, like so many of Girault's type slides, so it is impossible to see most of the characters of the head. The silvery setae arching across the face above the scrobes, characteristic of *extranea,* may or may not be present."

"My conclusions are that *Epitetracnemus* is probably a senior synonym of *Anabrolepis* but I should prefer not to publish this opinion until we are more certain, and also not until the possibility of conserving the better known Timberlake name has been examined. When someone collects fresh material it should be possible to determine specifically, against the type slide, and only then will it be possible to be sure of the synonymy."

"I agree with Dr Annecke's suggestion that "the species presently in *Habrolepis, Adelencyrtus* and *Anabrolepis* now also the Australian things want careful revision on a thicker than national basis. Perhaps we should do no more, at this stage, than alert other workers to the possible synonymies rather than attempt to implement them."

SUBFAMILY ARRHENOPHAGINAE

1904 *Arrhenophagini,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 311.
1909 *Arrhenopohagini,* Schmiedeknecht, *Gen. Ins.,* 97 : 260.
1921 *Arrhenophaginae,* Mercet, *Faun. Iberica,* 51.
1953 *Arrhenophaginae,* Ghesquiere, *Proc. X. congr. inter. Ent.,* 1 : 276.
1963 *Arrhenophaginae,* De Santis, *Ann. Comm. Invest. Cient. Prov. Buenos Aires,* 4 : 36.
1979 *Arrhenophagini,* Krombein *et al.,* Hymen. N. America, 1 : 929.

Mandibles acutely pointed, but without teeth apically; scutellum never transverse; fore wing with *m* punctiform or absent; *st* very short or absent; *pm* not developed; tarsi with 4-5 segments; *Rhopoideus* Howard with 5 tarsal segments and *Arrhenophagus* Aurivillius with 4 tarsal segments were included here by Schmiedeknecht.

Arrhenophagus Aurivillius

1888 *Arrhenophagus,* Aurivillius, *Ent. Tidiskr.,* 9 : 144.
1904 *Arrhenophagus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 311.
1909 *Arrhenophagus,* Schmiedeknecht, *Gen. Ins.,* 97 : 260.
1911 *Arrhenophagus,* Girault, *J.N.Y. ent. Soc.,* 19 : 177.
1915 *Arrhenophagus,* Girault, *J.N.Y. ent. Soc.,* 23 (4) : 241.
1921 *Arrhenophagus,* Mercet, *Fauna Iberica,* 51.
1924 *Arrhenophagus,* Timberlake, *Proc. Hawaii. ent. Soc.,* 5 (3) : 433.
1938 *Arrhenophagus,* Mani, *Cat. Indian Ins.,* 23 : 97.
1951 *Mymariella,* Risbec, *Mem. Inst. Fr. Afr. Noire,* 13 : 402.
1955 *Arrhenophagus,* Erdös, *Beitr. Ent.,* 5 : 169.
1957 *Arrhenophagus,* Tachikawa, *Japan J. appl. Ent. Zool.,* 1 : 135.
1963 *Arrhenophagus,* De Santis, *Ann. Com. Inv. Cient. Prov. Buenos Aires,* 4 : 36.
1963 *Arrhenophagus,* Agarwal, *Z. Parasitenk.,* 22 (5) : 394.
1979 *Atthenophagus,* Krombein *et al.,* Hymen. N. America, 1 : 929.

Female : Head viewed in front subtriangular; frons long; eyes minute, rounded, glabrous; occiput excavate; mandibles acute apically, with one minute truncature or denticle in the inner border; ocellar triangle obtuse; maxillary palpi with 2 segments, second segment stout and long; labial palpi with one segment; scrobe deep; antennae with scape, pedicel, 2 annelli; club entire, truncate apically; male with 9 segments.

Mesonotum entire; axillae contiguous or slightly separated large, scutellum subtriangular; propodeum very short; wings hyaline; speculum absent or obscure and interrupted; sm short; *m* and *pm* almost absent; *st* present but short; tarsi with only 4 segments; middle tarsus swollen apically; middle tibial spur acute, equal to or a little longer than metatarsus; middle metatarsus shorter than the terminal segment; hind tibial spur single.

Abdomen ovate, reduced posteriorly; ovipositor very short.

Male : Scape, pedicel, funicle of 4 segments, club obscurely triarticulate, flagellum with long setae.

Type-species *Arrhenophagus chionaspidis* Aurivillius

KEY TO SPECIES

1. Tibiae yellow	*A. albitibiae* Girault
Tibiae not yellow	2
2. Club obliquely truncate apically	*A. chionaspidis* Aurivillius
Club narrowly rounded apically	*A. diaspidiatus* Agarwal

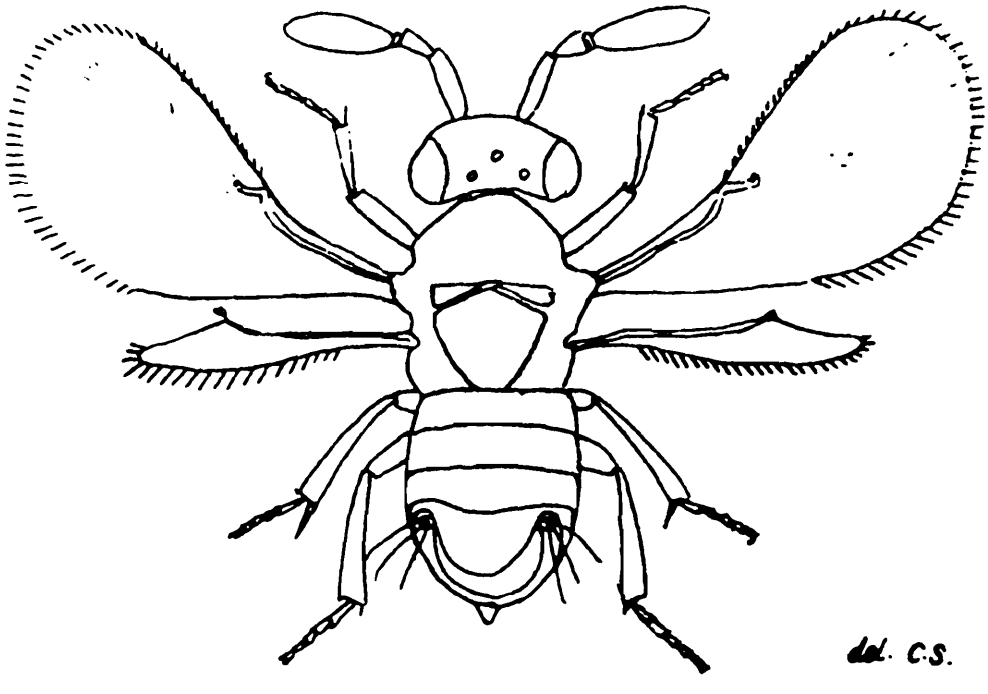

FIG. 258. *Arrhenophagus chionaspidis* Aurivillius, female.

Arrhenophagus chionaspidis Aurivillius

(Fig. 258 & 259)

1888 *Arrhenophagus chionaspidis,* Aurivillius, *Ent. Tidskr.,* 9 : 146.
1898 *Arrhenophagus chionaspidis,* Howard, *Proc. ent. Soc. Washington,* 4 : 135.
1900 *Coccobius diaspidis,* Ashmead, *Proc. US nat. Mus.,* 22 : 408.
1911 *Arrhenophagus chionaspidis,* Girault, *J.N.Y. ent. Soc.,* 19 : 178.
1915 *Arrhenophagus chionaspidis,* Girault, *J.N.Y. ent. Soc.,* 23 (4) : 241.
1921 *Arrhenophagus chionaspidis,* Mercet, *Fauna Iberica,* 51.
1938 *Arrhenophagus chionaspidis,* Mani, *Cat. Indian Ins.,* 23 : 97.
1940 *Arrhenophagus chionaspidis,* Pruthi & Mani, *ICAR Misc. Bull.,* 30 : 17.
1949 *Arrhenophagus chionaspidis,* Ferrière, *Mitt. Dchweiz. ent. Ges.,* 22 (4) : 370.
1953 *Arrhenophagus chionaspidis,* Ferrière, *Rev. Path. Veg. d'Ent. Agr. France,* 32 (2) : 116.
1957 *Arrhenophagus chionaspidis,* Tachikawa, *Japan J. Appl. ent. Zool.,* 1 (3) : 174.

1963 *Arrhenophagus chionaspidis,* De Santis, *Ann. Com. Invest. Cient. Prov. Buenos Aires,* 4 : 38.

1964 *Arrhenophagus chionaspidis,* Hoffer, *Acta Soc. ent. Cechosl.,* 61 (2) : 118-122.

1968 *Arrhenophagus chionaspidis,* Trjpitzin, *Trudy Vses. Ent. Obshch.,* 52 : 47.

1975 *Arrhenophagus chionaspidis,* Shafee, Alam & Agarwal, *Aligarh Muslim Univ. Mon.* (Zool.) 10 : 106.

1979 *Arrhenophagus chionaspidis,* Krombein *et al.,* Hymen N. America, 1 : 929.

Female : Length 0.50-0.59 mm. Body uniformly blackish-brown, middle of abdomen yellow; antennae and legs dark yellow; hind femur black, wing hyaline with one minute spot behind vein *m;* eyes black.

Frontovertex and frons finely reticulately-squamous; frons as wide as long; ocellocular space less than front ocellar space; terminal palpal segment broadly truncate apically; scape fusiform, much shorter than club; pedicel pyriform, stout, longer than thick; annelli very short, wider than long, first annellus larger than the second; club very large, stout obliquely truncate; antennal segments ratio 88 : 38 : 4 : 4 : 124.

Pronotum short; scutum reticulo-squamous, glabrous; axillae reticulately squamous with one seta at base; scutellum finely striate, with 2 long setae near apex; fore wing relatively broad; length : width ratio 50 : 21; terminal segment of all tarsi longer than metatarsus; middle tibial spur thicker than that of hind tibia, and equal to metatarsus.

Abdomen ovate, finely reticulately squamous; first 4 tergites transverse, normal, subequal; tergites 3-6 each with a pair of long setae dorsally; seventh tergite with 2 apical bristles.

Male : Rare; antennae with 9 segments : 1 1.6.1

Type locality : Ceylon

Distribution : Europe, N. America, S. America, Asia, Australia, India.

Hosts : Coccids like *Aulacaspis rosae, Chionaspis salicis* (L) *Chionaspis ugeni, Diaspis ostreaeformis, Aspidiotus hederae* and *Florinia saprosomae, Dynaspidiotus britannicus* (Newst.)

The species shows variations in body colour; pedicel, club and hind tibiae may be black.

Arrhenophagus diaspidiatus Agarwal

(Fig. 259 & 260)

1963 *Arrhenophagus diaspidiatus,* Agarwal, *Z. Parasitenk.,* 22 : 394.

Female : Length 0.42 mm. Body grey to brown; head almost grey above, light below, about as long as wide; scape and pedicel somewhat colourless, club with a slight light brown tinge; thorax

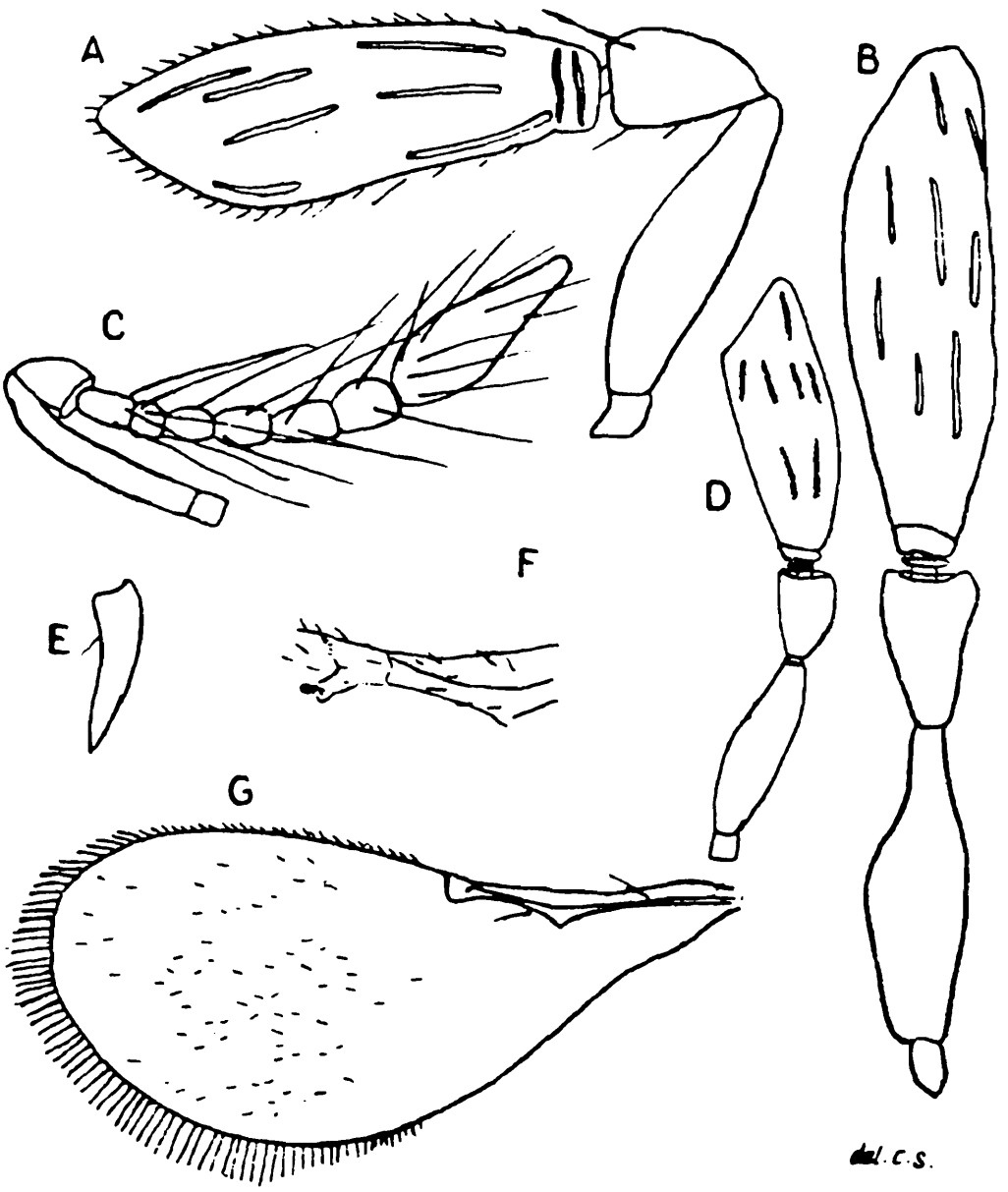

FIG. 259. *Arrhenophagus chionaspidis* Aurivillius, female : A. Antenna; C. Antenna; D. Antenna; E. Mandible; F. Stigmal venation; *Arrhenophagus diaspidiatus* Agarwal : B. Antenna; G. Fore wing.

uniformly coloured grey with slight tinge of dark brown along the anteirior margin of scutum, margins of axillae and apex of scutellum; legs uniformly light dusky; abdomen brown.

Frontovertex wider than long, shorter than scape; lateral ocelli almost touching occipital margin, well removed from eye; eyes naked, slightly longer than wide; gena short, equal to eye; antennal socket about 3 times its diameter from facial margin; scrobes about 0.20 of width of frontovertex; mandibles with a single acute tooth; maxillary palpi with 2 and labial palpi with one segment; scape long, slightly compressed in basal 0.50, almost 3 times longer than thick;

pedicel large, slightly less than 1.50 times longer than thick; pedicel large, slightly less than 1.50 times longer than thick; funicle 2-segmented, first segment about 8 times thicker than long, second segment about 2 times thicker than long, second segment about 2 times thicker than long; club unsegmented, very large, more than 3 times longer than thick, narrowly rounded apically.

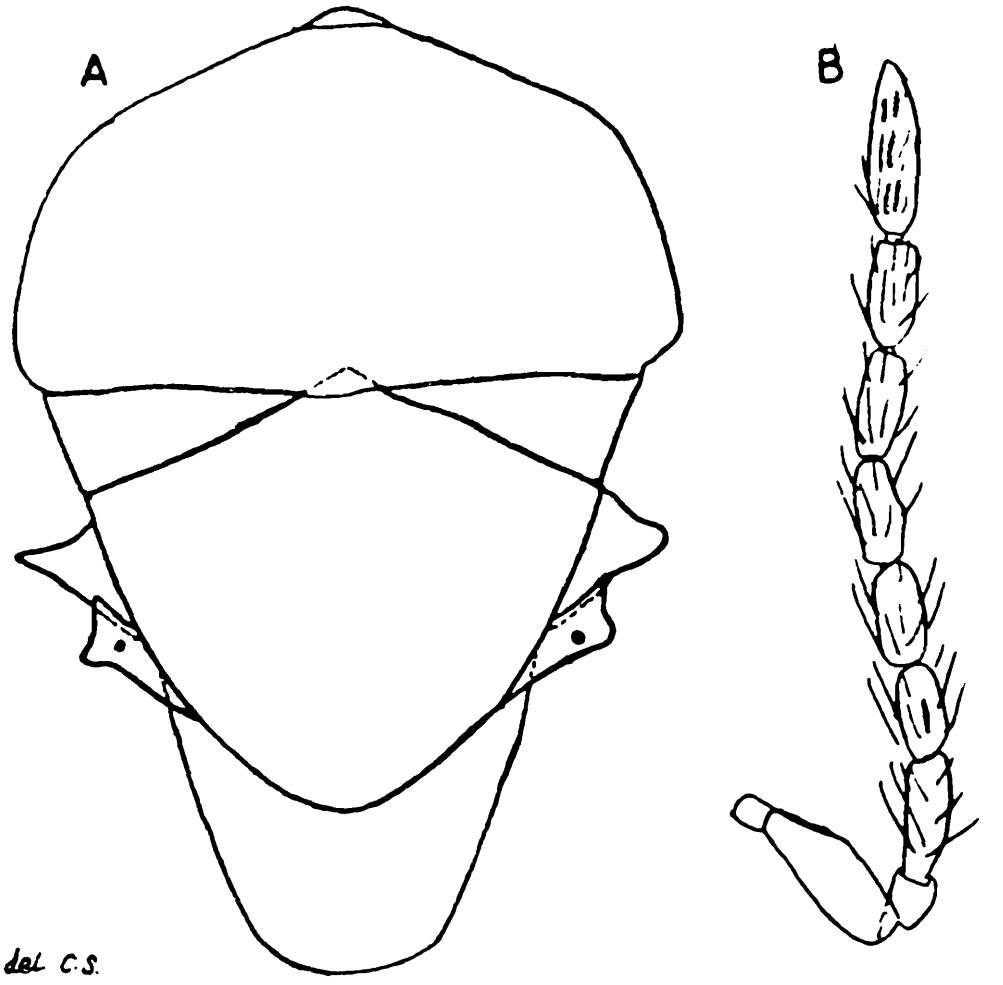

FIG. 260. *Arrhenophagus diaspidiatus* Agarwal : A. Thoracic dorsum; B. Antenna. (*Modified from* Agarwal).

Pronotum narrow in the middle, front margin deeply, acutely notched, with a bulbous notch in the middle; hind margin straight; mesoscutum about 2 times wider than long, without parapsidal furrows; axillae small, separated; scutellum narrower and longer than scutum; scutum and axillae reticulate, scutellum with polygonal striations; metanotum narrow, propodeum of uniform width; mesopostphragma rounded at apex; fore wings hyaline, very slightly infuscated behind veins; more than 2 times as long as wide, vein *sm* long, expanded into a triangle in apical 0.33; veins *m, pm* and *st*

obscure, like a knob at apex of vein *sm;* marginal fringe long, spaced by a distance equal to 0.33 length of a fringe; hind wings hyaline, about 6 times longer than wide; costal cell wanting; marginal fringe very long, less than wing width, spaced by a distance equal to 0.33 length of a fringe; tarsi 4 segmented; fore femora longer than tibiae; tibial spur short and straight; middle tibial spur longer than metatarsus.

Abdomen shorter than thorax, rounded apically; cercal plates start very close to the base; ovipositor concealed; subgenital plate broad basally; front margin concave, with a notch in the middle; hind margin with a wide notch in the middle; outer plate of ovipositor subtriangular, greatly expanded, truncated at apex with ventral margin thickened; first valvifers subtriangular with articular knobs little prominent, second valvifers with upper margin thickened throughout, third valvulae subtriangular, immovably articulated with second valvifers.

Type locality Aligarh

Host *Diaspis* sp. on *Cirtus medica*

Species Incertae Sedis

Arrhenophagus albitibiae Girault

1915 *Arrhenophagus albitibiae,* Girault, *Trans. N.Y. ent. Soc.,* 32 : 240.
1938 *Arrhenophagus albitibiae,* Mani, *Cat. Indian Ins.,* 23 : 97.

Type locality : Ceylon

SUBFAMILY ANTHEMINAE

1922 *Antheminae,* Mercet, *Bol. R. Soc. Esp. Hist. Nat.,* 22 : 363-370.
1955 *Antheminae,* Hoffer, *Sb. narod. Mus. Praze,* 11 (1) : Ent.
1963 *Antheminae,* De Santis, *An. Com. Invest. Cient. Prov. Buenos Aires,* 4 (Ent.) : 29.

Mandibles wide apically, denticulate-truncate; funicle with 5-6 segments, club short; fore wings elongate, narrow, with long marginal fringe; tarsi with 4 segments (very rarely with 5).

Anthemus Howard

1896 *Anthemus,* Howard, *Proc. US nat. Mus.,* 18 : 643.
1904 *Anthemus,* Ashmead, *Mem. Carnegie Mus.,* 1 (4) : 363.
1909 *Anthemus,* Schmiedeknecht, *Gen. Ins.,* 97 : 498.
1922 *Anthemus,* Mercet, *Bol. R. Soc. Esp. Nat.,* 22 : 365.
1939 *Hexalis* (partim), Bakkendorf, *Korasp. Bl. naturl. Ver. Riga,* 63 : 86.

1950 *Anthemus,* Ghesquiere, *Proc. VIII. ent. nat. Congr. Ent.*, 1948. Stockholm, XIII. 1-7.

1965 *Anthemus,* Ferrière, *Mitt. Schweiz. ent. Ges.*, 37 : 123.

1976 *Anthemus,* Subba Rao, *J. nat. Hist.*, 10 : 685.

Scrobe converging above; antennae inserted on level of lower orbital border; in female with 8 and male 9 segments; club entire; tarsi 4 segmented; abdomen sessile, fore wing often infumate; mandible bidentate, with one apical acute tooth and a truncature; maxillary palpi biarticulate; labial palpi uniarticulate; vein *m* obliterated; *pm* and *st* absent.

The genus was placed by Ashmead and Schmiedeknecht under Anaphini of the Mymaridae. Mercet in 1922 erected the subfamily Antheminae for the genus and placed it close to Arrhenophaginae under Encyrtidae. The affinities are discussed by Ghesquiere 1950.

Type-species : Anthemus chionaspidis Howard

KEY TO SPECIES

1. Fore wing behind vein *sm* very faintly infumate; discal cilia long and dense; ovipositor long	*A. chionaspidis* Howard
Fore wing behind vein *sm* strongly infumate; discal cilia very short and sparse; ovipositor short	*A. maculatus* Subba Rao

Anthemus chionaspidis Howard

1896 *Anthemus chionaspidis,* Howard, *Proc. US nat. Mus.*, 18 : 643.

1911 *Anthemus chionaspidis,* Girault, *Arch. Naturg.*, 77 (1) (2) : 133.

1938 *Anthemus chionaspidis,* Mani, *Cat. Indian Ins.*, 23 : 144.

Male/Female : Length 0.53 mm. Body yellowish-brown; darker at sides, base of abdomen and propodeum at sides; eyes dark purple; ocelli red; legs honey-yellow; hind femora darker; funicular segment in male falsk-shaped; hind wing without discal cilia except for a row of 6 setae; from the tip of the vein, fore wing densely strongly hairy, fore wing faintly infuscate behind vein *sm;* parallel sided apically; hind wing with a single row of discal cilia; antennae in female with 5 and in male with 6 funicular segments; ovipositor long.

Female : Scape cylindrical; pedicel much longer than funicular segments; last funicular segment hardly longer than the first; mesophragma reaching middle of the abdomen; metatarsus long; tibial spur single; mandible with 5-6 teeth; marginal fringe 3.50 times the width of wing; fore wing infuscate upto the tip of vein; lateral ocelli not contiguous to eye.

Male Club with 2 verticillate hairs; scape longer than club.

Type locality : Ceylon

Distribution : Ceylon

Host : Chionaspis graminis

Anthemus maculatus Subba Rao

(Fig. 261)

1976 *Anthemus maculatus,* Subba Rao, *J. nat. Hist.,* 10 : 685.

Female : Antennae dark brown; legs predominently brown to dark brown, tarsi pale; head, thorax and abdomen dark brown to black; fore wings basally strongly infuscate.

Head wider than high; ocelli large, in a wide-angled triagle; antennal sockets 2 times their own length apart and the same distance from eyes; scrobes strong, inverted V-shaped as in other known species; mandible with a minute acute tooth and a broad truncature; maxillary palpi with 2 segments; funicular segments 5; scape slightly expanded in the middle; radicle very long, over 0.50 of scape; pedicel large, nearly 0.67 of scape, as thick as scape; at its thickest and as long as first 3 funicular segments combined; first 2 funicular segments longer than thick, third nearly quadrate, fourth and fifth transverse; club entire, long, a little shorter than funicle; funicular segments without of rhinaria; club with a single rhinarium.

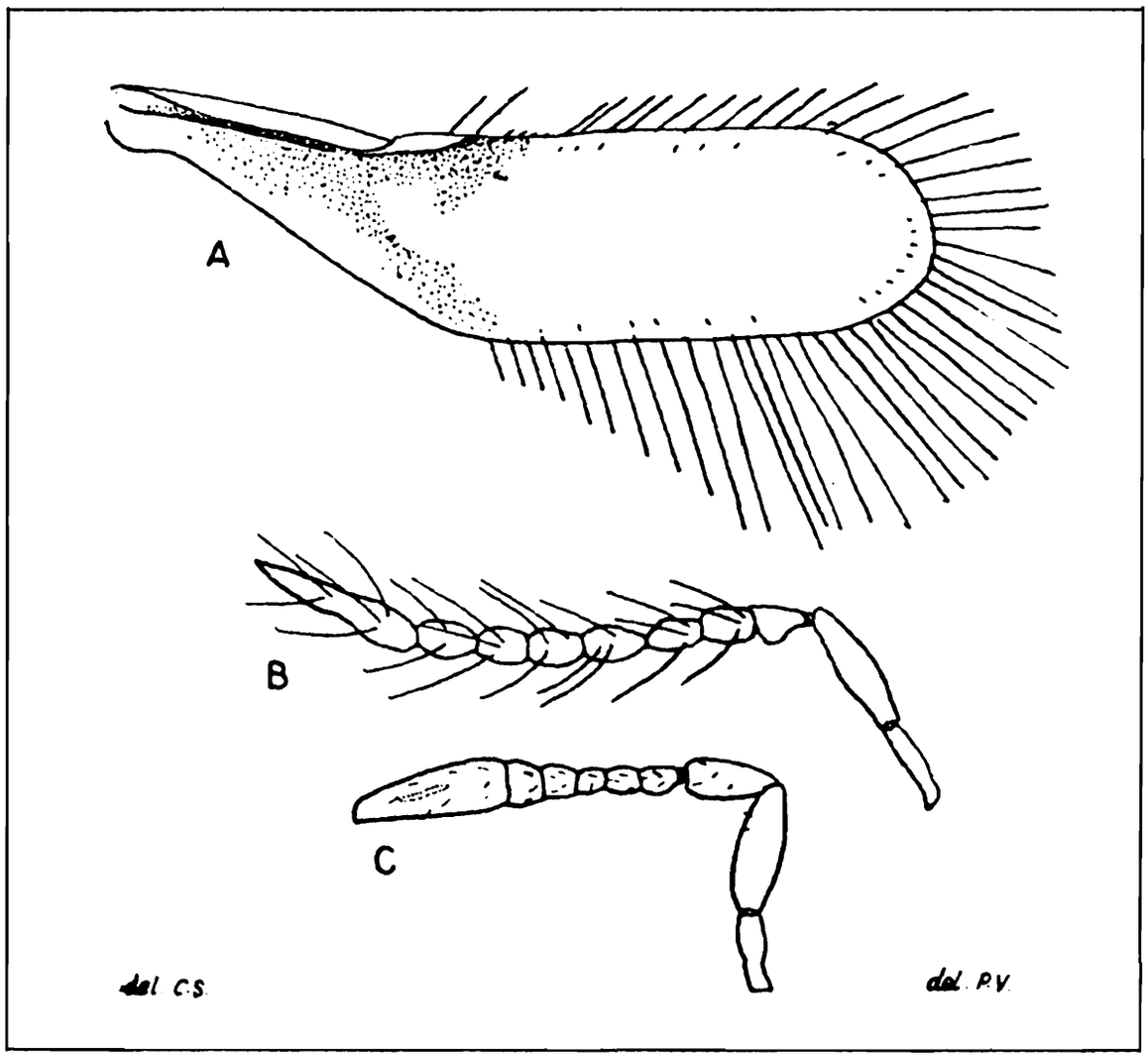

FIG. 261. *Anthemus maculatus* Subba Rao : A. Fore wing, B. Antenna, C. Antenna, female. (*Modified from* Subba Rao).

Thorax inconspicuously aciculate punctate; mesoscutellum depressed, almost like the keel of a boat; scutellum with 2-4 setae; middle tibial spur shorter than metatarsus; fore wing strongly infuscated basally; vein *sm* with a stout seta and 2 at tip of obliterated vein *m*.

Abdomen slightly shorter than thorax, ovipositor a little exserted.

Male : Like female except funicle 6-segmented; club entire.

Type locality : Pakistan : Quetta

Distribution : Pakistan

Host : Diaspidiotus pronorum Laing.